Diamond Digital

A REGISTERED TRADEMARK OF MITSUBISHI ELECTRIC AUSTRALIA PTY LTD

R100
Wireless Gateway

User's Manual

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Reference Information	
For future reference, write the following information about your product in the space below. The serial number is found on the back of the product or on the bottom of its stand.	
Product Information	
Product Name:	R100 Wireless Gateway
Serial Number:	
Date of Purchase:	
Dealer Information	
Dealer:	
Telephone Number:	
Address:	

1. Introduction

Overview

Thank you for purchasing the R100 Wireless Gateway. The R100 complies with IEEE 802.11g and 802.11b standards. The 802.11g is an extension to 802.11b (used in the majority of wireless LANs today) that broadens 802.11b's data rates to 54 Mbps within the 2.4 GHz band using OFDM (orthogonal frequency division multiplexing) technology. The 802.11g allows backward compatibility with 802.11b devices but only at 11 Mbps or lower, depending on the range and presence of obstructions. Wireless LANs are complementary extensions to existing wired LANs, offering complete mobility while maintaining continuous network connectivity to both corporate and home Intranets. They add a new level of convenience for LAN users, as PC's stay connected to the network anywhere throughout a building without being bound by wires. This is accomplished through the use of the Access Point functionality of the Wireless Gateway. The built-in Internet gateway capability allows your family to share a broadband Modem and one ISP account simultaneously from different rooms without wires!

System Requirements

To begin using the R100 Wireless Gateway, you must have the following minimum system requirements:

- ADSL/Cable Modem and Broadband Internet Account.
- An Ethernet (10Base-T or 10/100Base-TX) adapter for a wired client
- At least one 802.11g (54Mbps) or one 802.11b (11Mbps) wireless adapter for wireless mobile clients
- TCP/IP and an Internet browser installed

Features

The R100 Wireless Gateway features include:

- **Wireless Connectivity and backwards compatibility.**

  The R100 allows fast 54Mbps IEEE 802.11g wireless transmission and maintains compatibility with existing IEEE 802.11b devices. The R100 complies with the IEEE 802.11b standard.

- **Secure wireless connectivity.**

  The integrated Wireless Access Point with WEP/ WPA-PSK authentication and encryption functionality allows the wireless gateway to link a broadband Internet connection to your local 802.11g and/or 802.11b wireless mobile clients securely.

- **Multiple local network ports.**

  Four 10/100Base-T Ethernet ports, offering either a connection to either a hub or switch on the local wired network or a direct connection to multiple Ethernet enabled computers. The built-in DHCP server allows the R100 to provide IP addresses to clients on your local network automatically.

- **Broadband port.**

  The Broadband port connects the R100 to your cable or DSL modem. Static IP, Dynamic IP and PPPoE (PPP over Ethernet) connections to the Internet are supported.

- **Shared Intenet access.**

  All computers on the local network can access the Internet through the R100, using only a single external IP address.

- **Firewall protection.**

  The R100's use of NAT (Network Address Translation) provides firewall protection for your local network.

- **Children Protection.**

  The R100 allows you to block the Internet access within a predefined time interval and to block the WWW access with specific keywords in a URL within a predefined time interval.

- **Wireless Firewall**.

Not only is it able to create a conventional firewall to block Internet traffic, the R100 Wireless Gateway can also set up another firewall to prevent the traffic from from being accessed by other wireless and wired local area networks.

- **USB device support.**

  Connecting a USB storage device to the wireless gateway enables you to set up an FTP server and share the USB storage device with Internet or WLAN users. With a USB web camera, the wireless gateway allows you to monitor locations such as your home or office from any location through a wireless LAN or over the Internet.

- **Printer sharing.**

  The R100 allows you to share a printer on your local area network. Standard parallel port printers are supported.

- **Easy setup and management.**

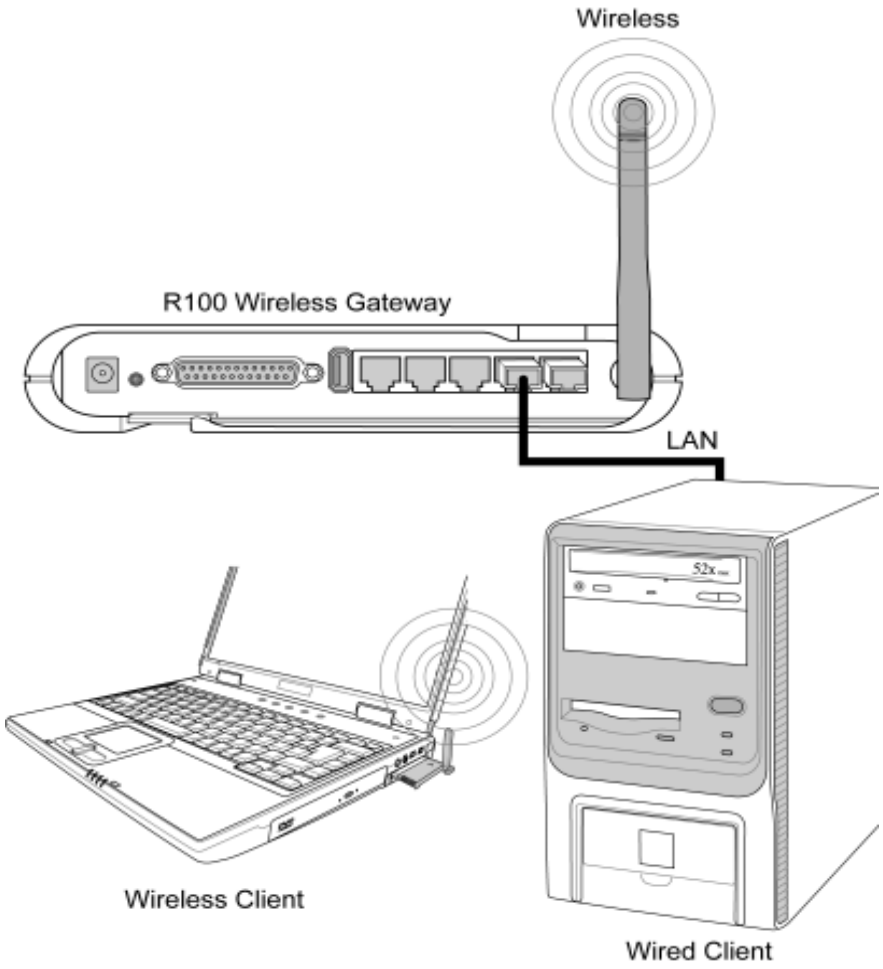
  Use your web browser from any computer on the local network to configure the R100.

Network Topology

The settings that you need to perform will vary depending on the role that your Wireless Gateway will play.

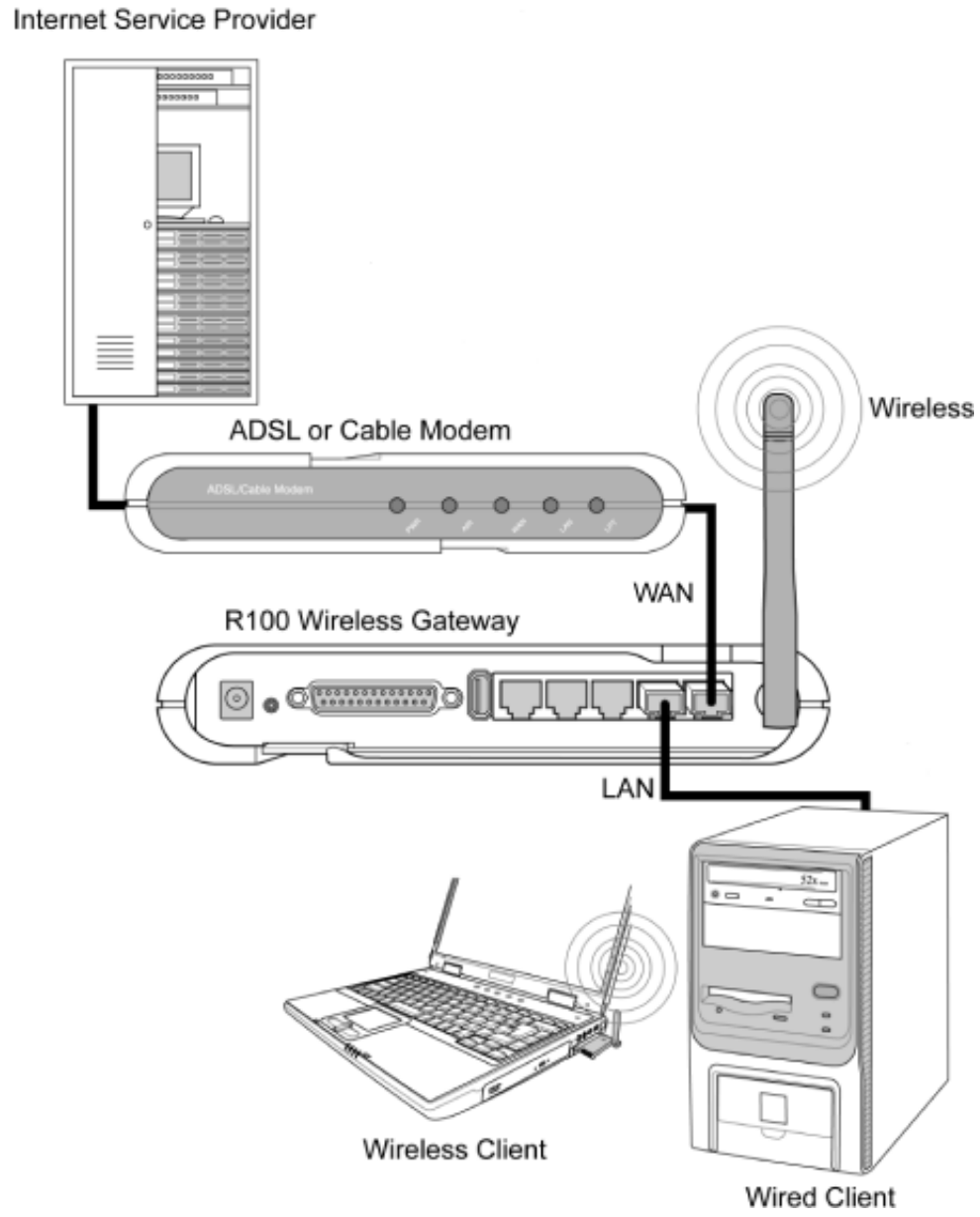
Network Backbone

No software setting is necessary in the R100 Wireless Gateway.



In this topology, the wireless gateway connects your wired and wireless devices together to form a local area network (LAN), as shown. To connect a computer (or other device) to the R100, you need a network cable (UTP-Cat5) with one end connected to one of the LAN ports on the back of the R100 and the other to the 10/100 LAN port on that device. For wireless connections, wireless mobile clients must comply with the IEEE 802.11b standard.

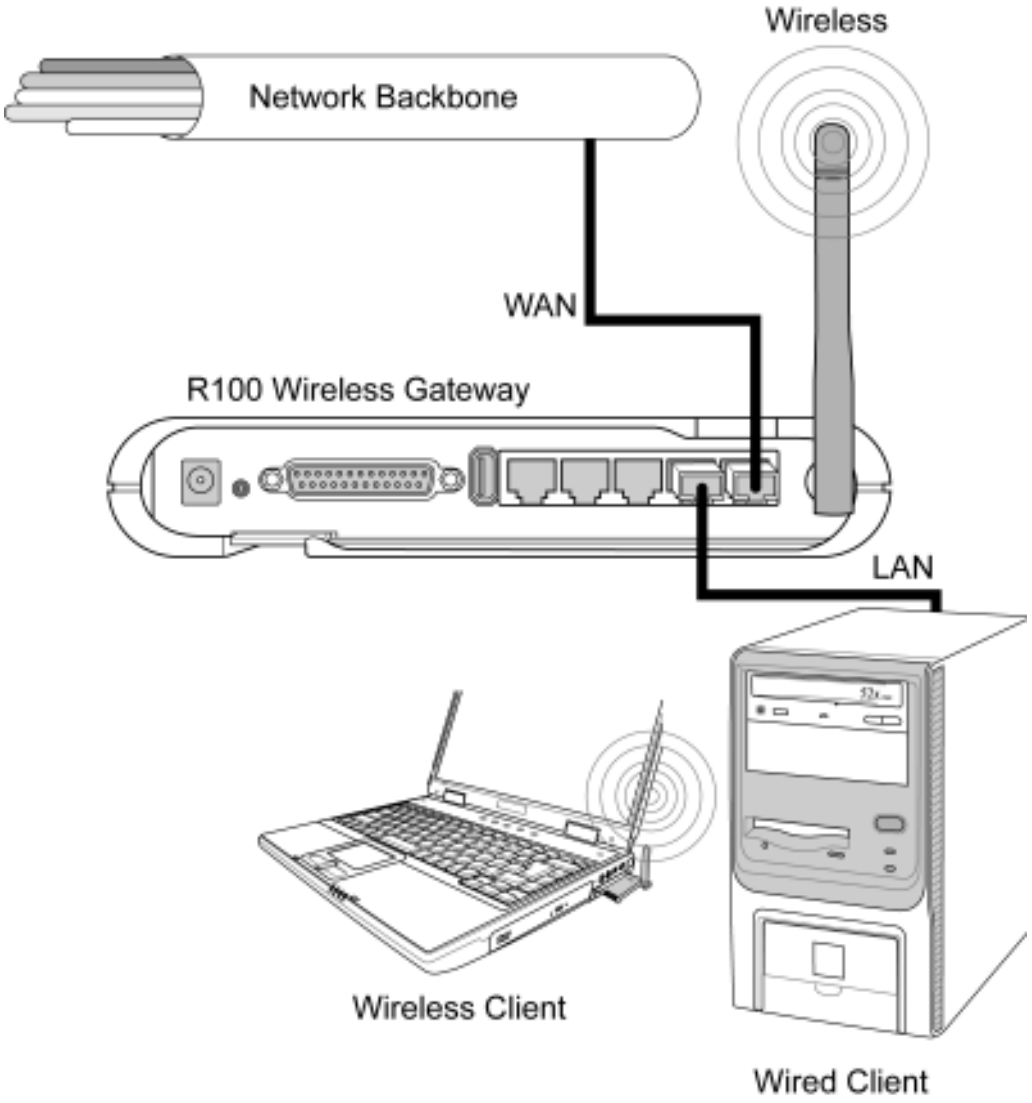
Agent to an ISP



In this topology, the wireless gateway is not only a backbone of your LAN but also an agent to your Internet Service Provider (ISP). You may use an ADSL or Cable modem to communicate with your ISP. Connect the LAN port on the modem with the WAN port at the back of the R100 Wireless Gateway using a network cable as shown above.

Note: You will need to ensure that other connections on the ADSL or Cable modem are correct.

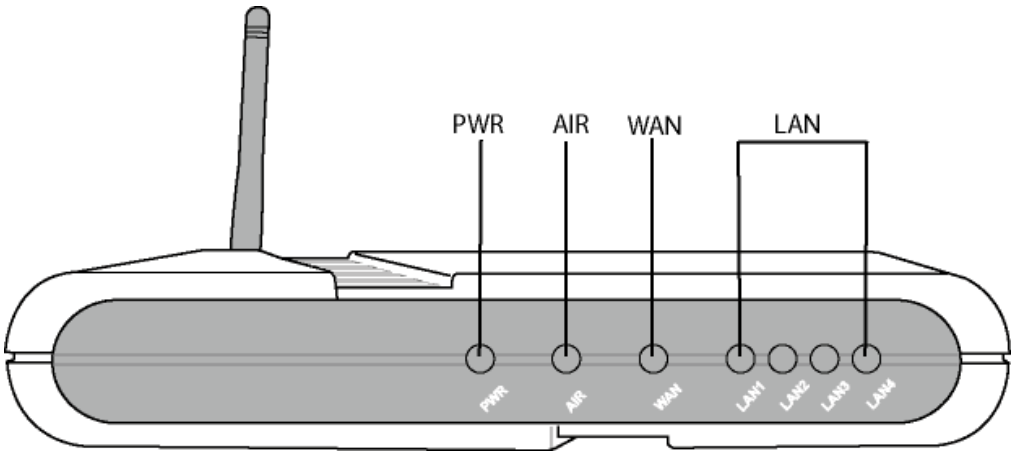
Agent to Another Network



In this topology, the wireless gateway is an agent between your LAN and another network. Use a network cable with one end connected to the WAN port on the wireless gateway and the other to the other network as shown above.

LED Indicators

The LEDs on the front of the R100 Wireless Gateway display the status of the device.



PWR (Power)

Off	No power
On	System ready
Flashing	Firmware upgrade failed

AIR (Wireless Network)

Off	No power
On	Wireless system ready
Flashing	Transmitting or receiving data (wireless)

WAN (Wide Area Network)

Off	No power
On	Has physical connection to an Ethernet WAN
Flashing	Transmitting or receiving data (through Ethernet wire)

LAN 1-4 (Local Area Network)

Off	No power
On	Has physical connection to an Ethernet LAN
Flashing	Transmitting or receiving data (through Ethernet wire)

2. Installation Procedure

Follow these steps to install the R100 Wireless Gateway.

1. Determine the best location for the wireless gateway. Keep in mind the following considerations:
   - The length of the Ethernet cable that connects the gateway to the network must not exceed 100 metres.
   - Try to place the gateway on a flat, sturdy surface as far from the ground as possible, such as on top of a desk or bookcase, keeping clear of obstructions and away from direct sunlight.
   - Try to position the gateway in a centralised position, so that it will provide coverage to all of the wireless mobile devices in the area. Orientating the antenna vertically should provide the best reception.
   - Use only the power supply that came with this unit. Other power supplies may fit but the voltage and power may not be compatible.

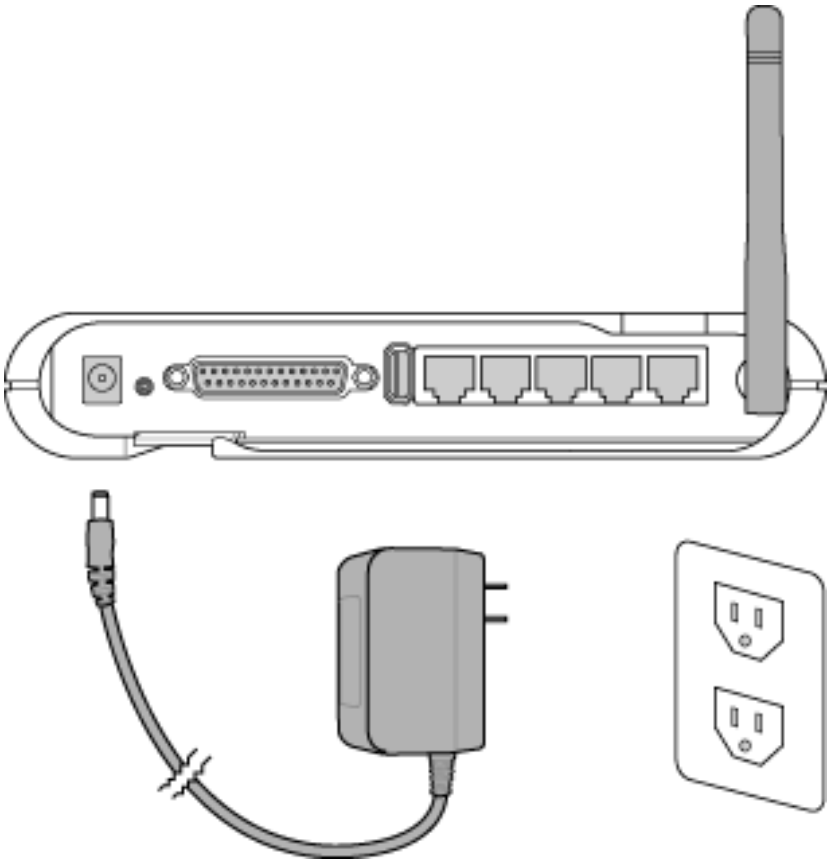
2. Wall mounting or vertical standing is also possible.

3. **LAN Connection:** Attach one end of an RJ-45 Ethernet cable to any one of the four LAN ports on the gateway and attach the other end to the RJ-45 Ethernet cable to your desktop computer.

4. **Power Connection:** The gateway requires power from an external power supply. The gateway ships with a UL listed, Class 2 power supply (5V, 2A). Attach one end of the DC power adapter to the back of the R100 and the other end to a power outlet.

   The Power LED on the front of the R100 will light up when the unit is powered ON. In addition, the blue LAN or WAN LEDs will turn ON to indicate that the gateway has a physical Ethernet network connection.

Warning: Use the R100 Wireless Gateway only with the power adapter supplied in the product package. Using another power supply may damage the gateway.



5. **Printer Connection:** Connect a printer to the R100's printer port or USB port to use the gateway as a printing server for your local network.
7. **USB Connection:** Connect a supported USB web camera or USB storage device to the R100's USB port.

Note: Before using an embedded USB application or device, refer to the USB storage and USB camera support list at the Product Information page for the gateway on the Mitsubishi Electric Australia website (www.mitsubishielectric.com.au)

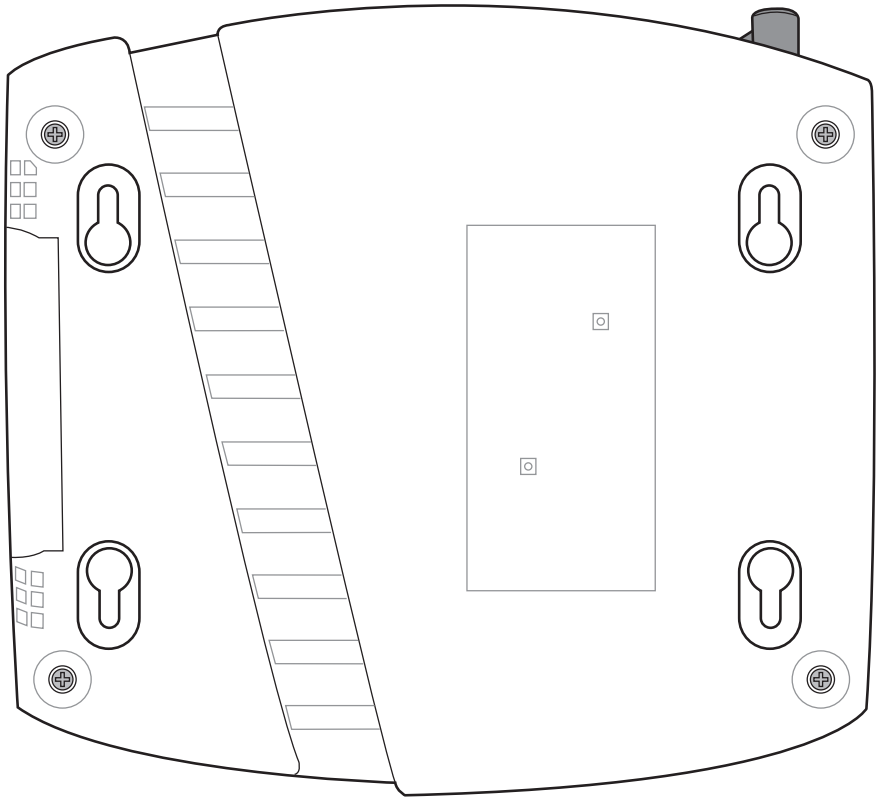
Wall Mounting Option

Out of the box, the R100 Wireless Gateway is designed to sit on a raised flat surface like a file cabinet or book shelf. The unit may also be converted for mounting to a wall or ceiling.

Follow these steps to mount the R100 Wireless Gateway to a wall:

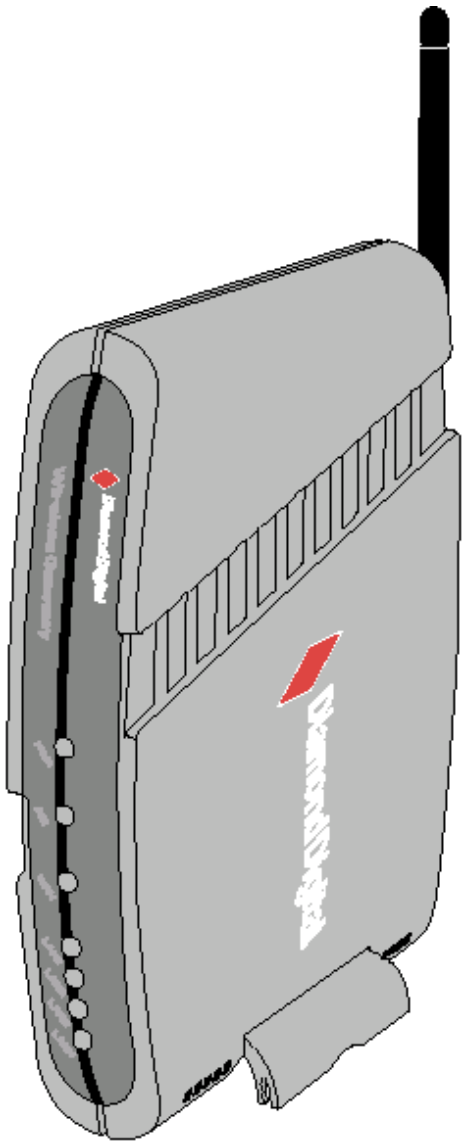
1. Look on the underside for the four mounting hooks.
2. Mark two upper holes in a flat surface using the provided hole template.
3. Tighten two screws until only 1/4" is showing.
4. Latch the upper two hooks of the wireless gateway onto the screws.

Note: Readjust the screws if you cannot latch the gateway onto the screws or if it is too loose.



Vertical Standing Option

The R100 Wireless Gateway can also stand on its side to save space. Two hinges can be opened on the right side to support vertical standing. Orientate the antenna so that it points upwards.



Connecting to the R100 Wireless Gateway

Wired Connection

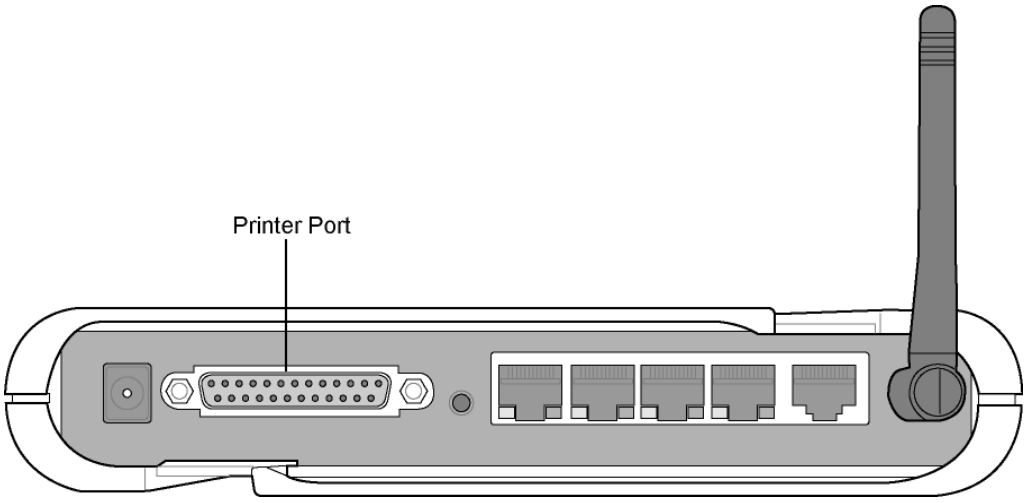
One RJ-45 cable is supplied with the R100 Wireless Gateway. Auto crossover functionality is built-in to the gateway, so you can use either a straight-through or a crossover ethernet cable. Plug one end of the cable into the WAN port on the rear of the wireless gateway and the other end into the ethernet port of your ADSL or Cable modem.

Wireless-Connection

Refer to your wireless adapter's user manual on associating with the R100. The default SSID of the gateway is "**default**" (lower case), encryption is disabled and open system authentication is used.

Printer Connection

A DB-25 parallel cable should be supplied with your printer. Plug the male connector of this cable into the printer port on the rear of the R100 and the centronics end into your printer.



3. Software Configuration

Configuring the R100 Wireless Gateway

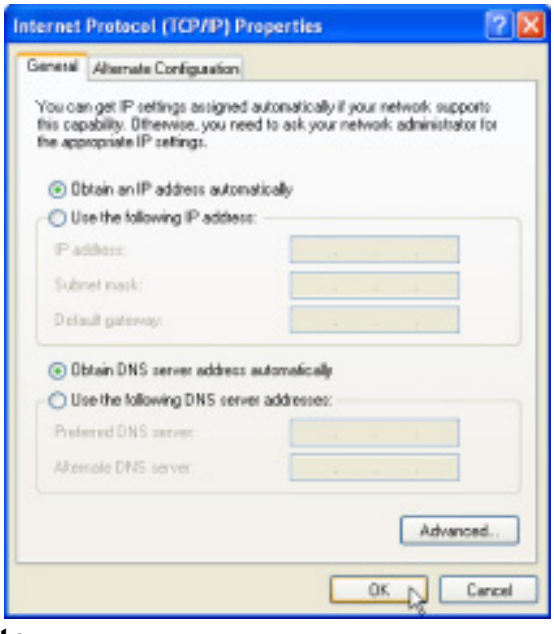
The gateway can be configured to meet various usage scenarios. Some of the factory default settings may suit your usage, however, others may need changing. Prior to using the gateway, you must check the basic settings to guarantee it will work in your environment. Configuring the gateway is done through a web browser. You need a Notebook PC or desktop PC connected to the gateway (either directly or through a network hub) and be running a web browser as a configuration terminal. The connection can be wired or wireless. For the wireless connection, you need an IEEE 802.11g/b compatible device (e.g. a WLAN Card, installed in your Notebook PC). You should also disable WEP and set the SSID to “default” for your wireless LAN device. If you want to configure the gateway or want to access the Internet through the gateway, the TCP/IP settings must be correct. Normally, the TCP/IP settings should be on the IP subnet of the R100 Wireless Gateway.

Note: Before rebooting your computer, the R100 Wireless Gateway should be switched ON and in the ready state.

Setting an IP address for the Wired or Wireless Connection

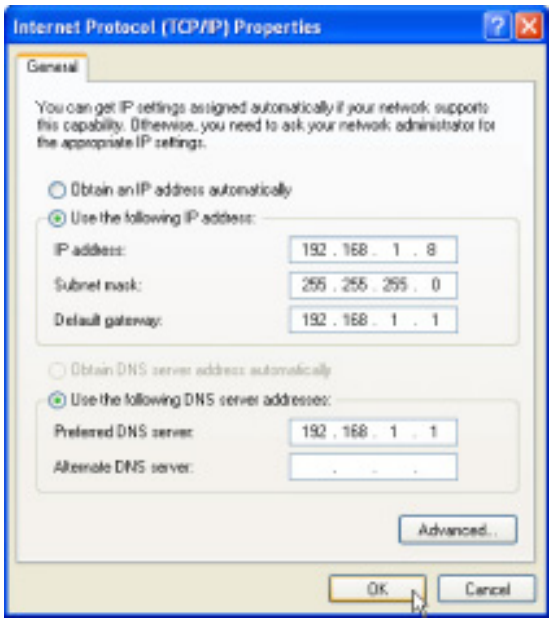
Getting the IP Automatically

The R100 Wireless Gateway incorporates a DHCP server so the easiest method is to set your PC to get its IP address automatically, then reboot your computer. This way, the correct IP, Gateway and DNS (Domain Name System) Server addresses can be obtained from the gateway.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Note: Before rebooting your PC, the gateway should be switched ON and in the ready state.

Setting an IP Address Manually


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 8
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192 . 168 . 1 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
192 . 168 . 1 . 1
Alternate DNS server:
Advanced...
OK
Cancel

If you want to set your IP address manually, the following default settings of the R100 Wireless Gateway are as follows:

- IP address 192.168.1.1
- Subnet Mask 255.255.255.0.

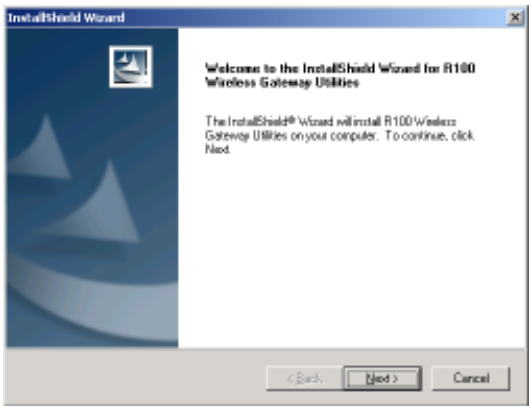
If you set your computer's IP address manually, it needs to be on the same segment. For example:

- IP address 192.168.1.xxx (xxx can be any number between 2 and 254 that is not used by another device)
- Subnet Mask 255.255.255.0 (same as the R100)
- Gateway 192.168.1.1 (this is the R100)
- DNS 192.168.1.1 (Gateway IP address or your own).

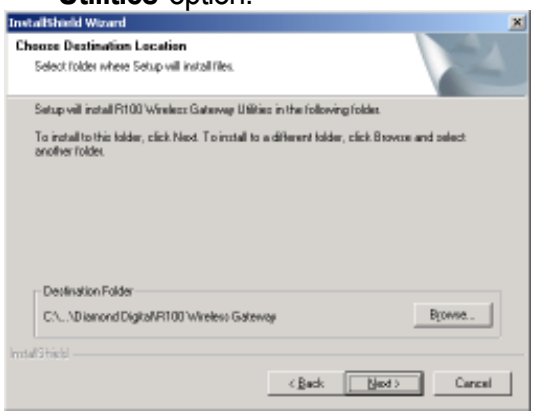
Installing the R100 Wireless Gateway Utilities

Follow these steps to install the R100 Wireless Gateway Utilities in Microsoft Windows. Insert the Driver CD provided with the Wireless Gateway and the main setup menu will automatically appear. (Double-click **setup.exe** if your Autorun has been disabled.)

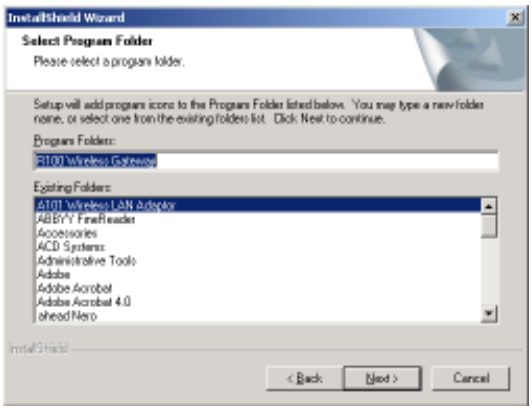
(1) Insert the Driver CD and the main setup menu will automatically appear. Select the Install **R100 Wireless Gateway Utilities** option.



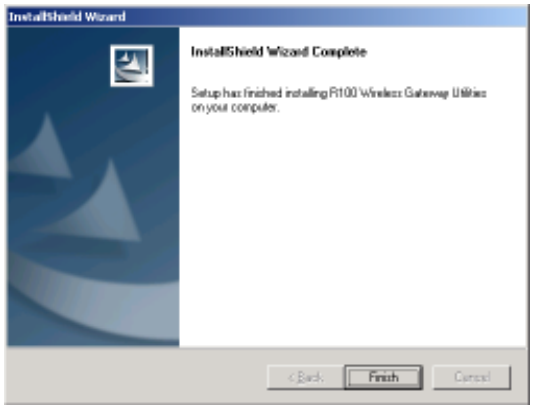
(2) Click **Next** after reading the welcome screen.



(3) Click **Next** to accept the default destination folder or enter another.



(4) Click **Next** to accept the default program folder or enter another.

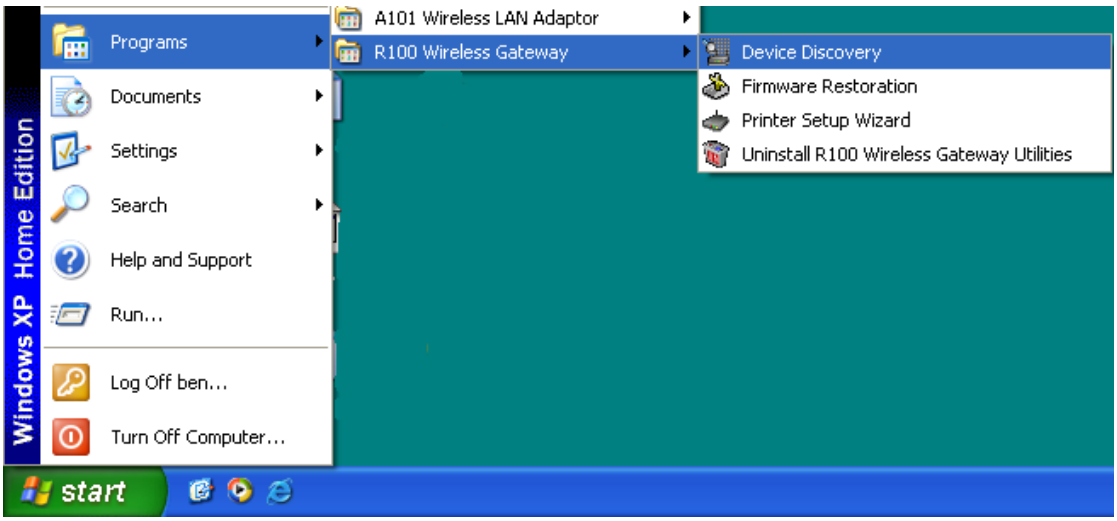


(5) Click **Finish** when setup is complete.

Using the Wireless Gateway for the First Time

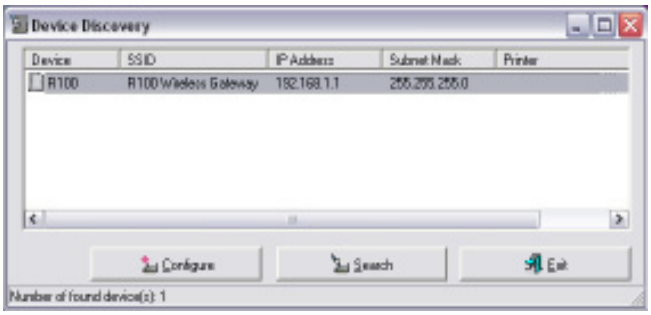
1. Wireless Gateway Utilities

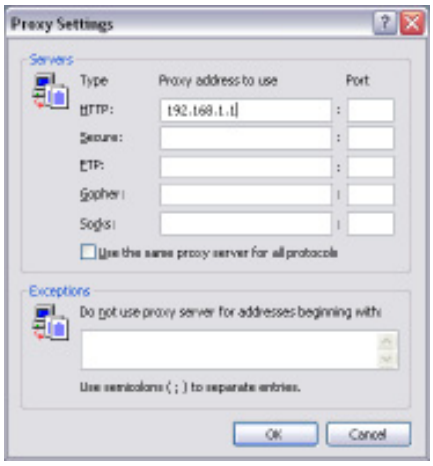
Go to **Start->Programs->R100 Wireless Gateway** and run the **Device Discovery** program .



2. Connect to the WLAN Web Manager

Click **Configure** when the device is found.





Add **192.168.1.1** in the Exceptions box if you are using a proxy server.

If your computer's IP is not on the same subnet as the R100 Wireless Gateway (192.168.1.X), you will be asked to change it. The IP address can be any number from 2 to 254 that is not used by another device. The Gateway IP address is not required.

Note: Using a proxy server for your LAN requires that you set an exception for the R100 Wireless Gateway otherwise the connection will fail.

Enter Address or Name Manually

You can also open your PC's web browser and enter the default IP address of the R100 Wireless Gateway:

http://192.168.1.1

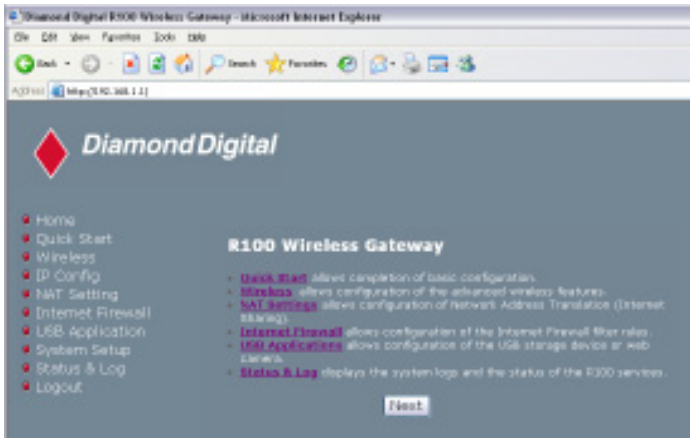
User Name & Password

Once connected, a window will appear prompting you for the User name and Password in order to log in. The factory default values are "**admin**" and "**admin**".

Note: If you cannot find the R100 due to a problem in the IP settings, push and hold the Restore button for over five seconds to restore factory default settings.

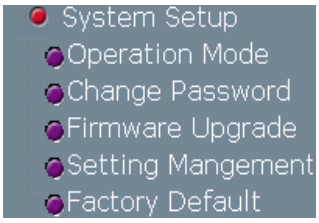
Home Page

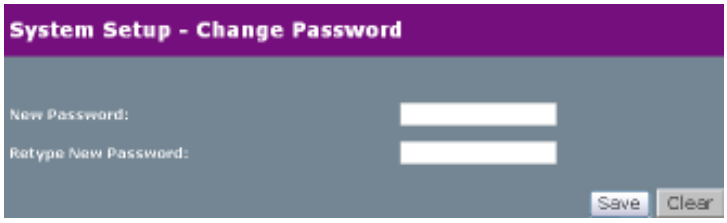
After logging in, you will see the R100 Wireless Gateway home page.



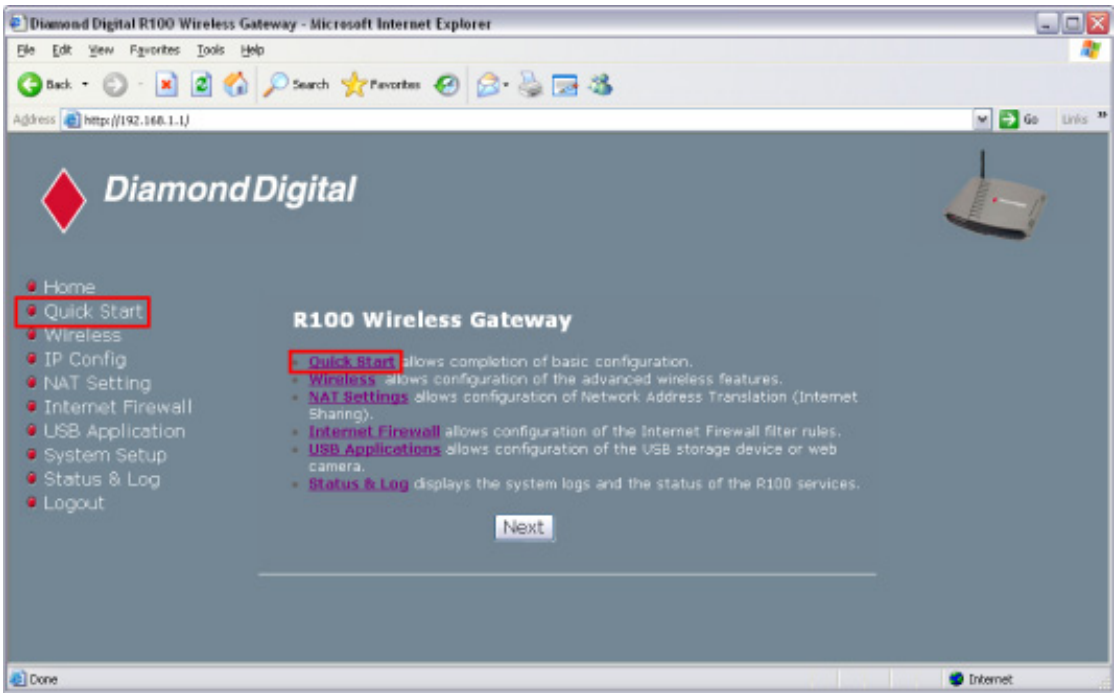
IMPORTANT: After entering information on any page, click the Apply button Apply. If you click any other link, you will be directed to another page and lose your new settings.

3. Set your own password





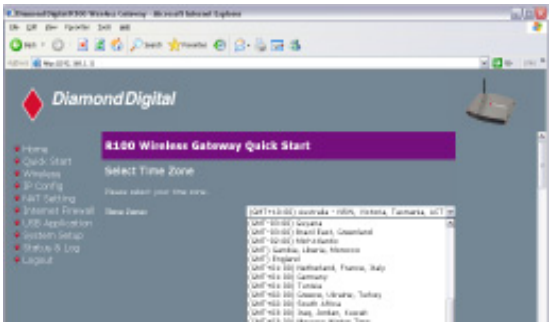
4. Use Quick Install


Diamond Digital R100 Wireless Gateway - Microsoft Internet Explorer
DiamondDigital
Home
Quick Start
Wireless
IP Config
NAT Setting
Internet Firewall
USB Application
System Setup
Status & Log
Logout
R100 Wireless Gateway
Quick Start allows completion of basic configuration.
Wireless allows configuration of the advanced wireless features.
NAT Settings allows configuration of Network Address Translation (Internet Sharing).
Internet Firewall allows configuration of the Internet Firewall filter rules.
USB Applications allows configuration of the USB storage device or web camera.
Status & Log displays the system logs and the status of the R100 services.
Next

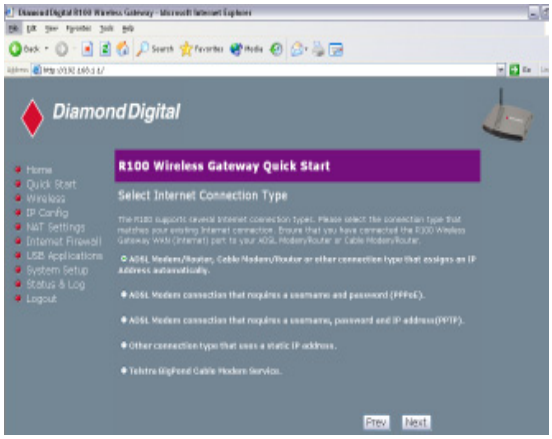
Wireless Gateway Mode

There are three operation modes for the R100 Wireless Gateway. The default operation mode of the R100 is Wireless Gateway Mode. Please refer to **System Setup – Operation Mode** in detail. Click **Next** to enter the **Quick Setup** page. Follow the instructions to set up the R100 Wireless Gateway.

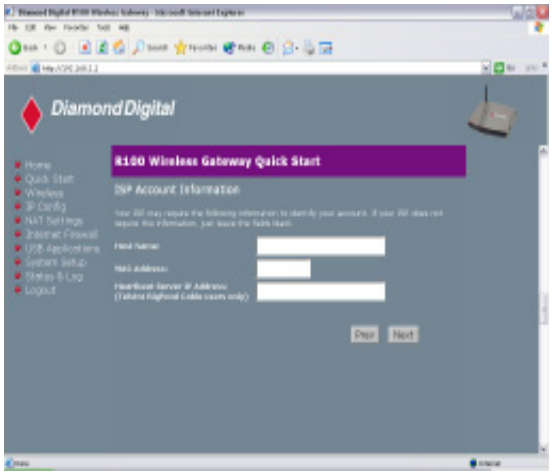
Quick Setup in Wireless Gateway Mode



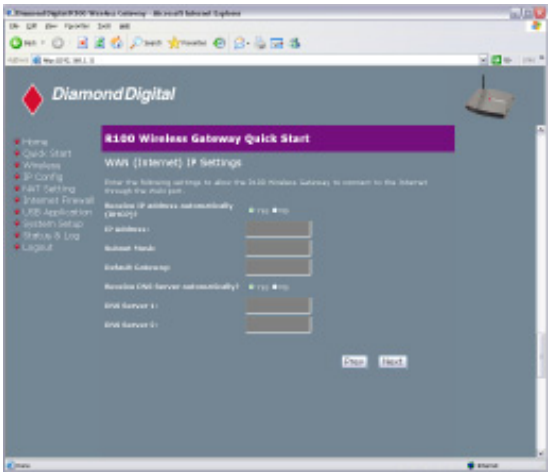
Select your time zone or the closest region. Click **Next** to continue.



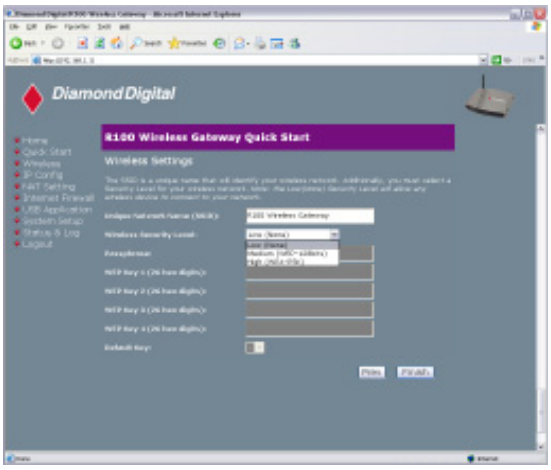
Select the connection type. Click **Next** to continue.



Enter the Host name of your ISP , the MAC address of the PC's network card and the Heartbeat Server IP adress (if required). Click **Next** to continue.



Select **No** to enter the IP Settings and/or DNS Server addresses manually. Selecting Yes will set the gateway to receive the information automatically. Click **Next** to continue.



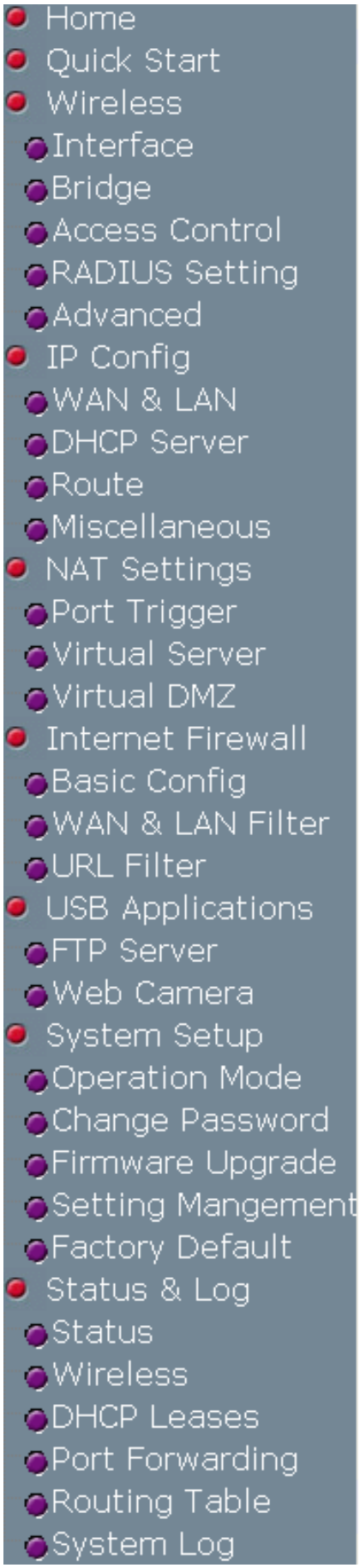
To set up your wireless interface, you must first give it an SSID (Service Set Identifier). The SSID is a unique identifier attached to packets sent over WLANs. This identifier emulates a password when a wireless device attempts communication on the WLAN. Because an SSID distinguishes WLANs from each other, access points and wireless devices trying to connect to a WLAN must use the same SSID.

Also, if you want to protect transmitted data, select a middle or high Security Level.

Middle: allows only those users with the same WEP key to connect to this access point and to transmit data using 128-bit WEP encryption.

High: allows only those users with the same WPA pre-shared key to connect to this access point and to transmit data using WPA-PSK (TKIP) encryption.

Click **Finish** to continue. You will be prompted to save the settings. Click **Save&Restart** to save and enable the settings to the R100 Wireless Gateway.



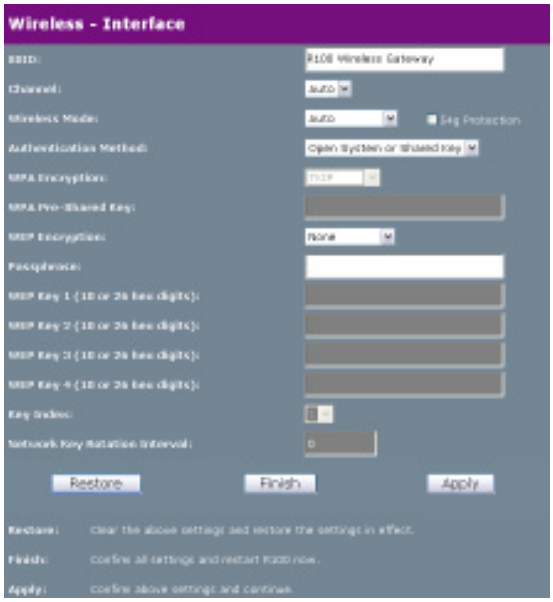
To adjust other settings, click an item on the menu to reveal a submenu and follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item. The following sections have submenu items:

- Wireless
- IP Config
- NAT Settings
- Internet Firewall
- USB Applications
- System Setup
- Status & Log

Wireless

Click on the **Wireless** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Interface



SSID

The SSID is an identification string of up to 32 ASCII characters that differentiate one R100 Wireless Gateway Access Point (AP) from another. The SSID is also referred to as the “ESSID” or “Extended Service Set ID.” You can use the default SSID and radio channel unless more than one R100 or Access Point is deployed in the same area. In that case, you should use a different SSID and radio channel for each R100 or Access Point. All R100 Wireless Gateways and Diamond Digital 802.11g/802.11b WLAN client adaptors must have the same SSID to allow a wireless mobile client to roam between the R100s. By default, the SSID is set to “default”.

Channel

The 802.11g and 802.11b specifications supports up to 14 overlapping channels for radio communication. To minimize interference, configure each 802.11g AP to be non-overlapping; select **Auto** from the Channel drop-down list to enable the system to select a clear channel during boot up as your operating channel.

Ensure that any R100 Wireless Gateways sharing the same channel (or channels which are close in number) are as far away from each other as possible, based on the results of your site survey of the facility. There is a site survey utility on the R100 Driver CD.

Wireless Mode

This field allows you to specify the transmission rate. Selecting **Auto** (recommended) allows 802.11g and 802.11b clients to connect to the R100 Wireless Gateway. Selecting **54G Only** maximizes performance, but prevents 802.11b clients from connecting to the gateway. If **54g Protection** is checked, G-Mode protection of 11g traffic is enabled automatically in the presence of 11b traffic. Select **802.11b only** when backward compatibility is needed for some older wireless LAN cards with a maximum bit rate of 2Mbps.

Authentication Method

This field enables you to set different authentication methods which determine different encryption schemes. The relationship between Authentication Method, Encryption, Passphrase and WEP Keys is listed in the following table. If you are not using a RADIUS server in a home environment and all your clients support WPA, using **WPA-PSK** is recommended for better security. If **WPA** or **Radius with 802.1x**, is selected, additional settings for the RADIUS server in the **Wireless – Radius** field are required.

Encryption (WEP)

Traditional WEP encryption is applied when **Open or Shared Key**, **Shared Key** or **Radius with 802.1x** authentication methods are selected.

When **WPA-PSK** or **WPA** authentication methods are used, the newly

Authentication Method	Encryption	Passphrase	WEP Key 1~4
Open or shared key	None WEP-64 bits WEP-128 bits	Not required 1~64 characters 1~64 characters	Not required 10 hex 26 hex
Shared key	WEP-64 bits WEP-128 bits	1~64 characters 1~64 characters	10 hex 26 hex
WPA-PSK ^	TKIP only * AES only *	8~63 characters 8~63 characters	Not required Not required
WPA ^	TKIP only * AES only *	Not required Not required	Not required Not required
Radius with 802.1x ^	Auto WEP-64 bits WEP-128 bits	Not required 1~64 characters 1~64 characters	Not required 10 hex 26 hex

* R100 supports AES and TKIP encryption for WPA.

proposed TKIP (Temporal Key Integrity Protocol) or AES (Advanced Encryption Standard) encryption schemes are applied.

TKIP: TKIP uses an encryption algorithm which is more stringent than the WEP algorithm and also uses existing WLAN calculation facilities to perform encryption operations. TKIP verifies the security configuration after the encryption keys are determined.

AES: AES is a symmetric 128-bit block data encryption technique which works simultaneously on multiple network layers.

64/128-bit versus 40/104-bit

The following section explains low-level (64-bit) and high-level (128-bit) WEP Encryption schemes:

64-bit WEP Encryption

64-bit WEP and 40-bit WEP are the same encryption method and can interoperate in a wireless network. This level of WEP encryption uses a 40-bit (10 Hex character) encryption scheme as a secret key, which is set by the user, and a 24-bit “Initialisation Vector” scheme, which is not under user control.

Together these two schemes make a 64-bit (40 + 24) encryption scheme. Some vendors refer to this level of WEP as 40-bit and others refer to this as 64-bit. Diamond Digital WLAN products use the term 64-bit when referring to this lower level of encryption.

128-bit WEP Encryption

104-bit WEP and 128-bit WEP are the same encryption method and can interoperate on a wireless network. This level of WEP encryption uses a 104-bit (26 Hex character) encryption scheme as a secret key which is set by the user, and a 24-bit “Initialisation Vector”, which is not under user control.

Together these two schemes make a 128-bit (104 + 24) encryption scheme. Some vendors refer to this level of WEP as 104-bit and others refer to this as 128-bit. Diamond Digital WLAN products use the term 128-bit when referring to this higher level of encryption.

Passphrase

Selecting **TKIP** or **AES** in the Encryption field is used as a password to begin the encryption process. Note: 8 to 63 characters are required.

Selecting **WEP-64bits** or **WEP-128bits** in the Encryption field generates four WEP keys automatically. A combination of up to 64 letters, numbers, or symbols is required. Alternatively, leave this field blank and type in four WEP keys manually.

- WEP-64bit key: 10 hexadecimal digits (0~9, a~f, and A~F)
- WEP-128bit key: 26 hexadecimal digits (0~9, a~f, and A~F)

Note: The Diamond Digital WLAN family of products uses the same algorithm to generate WEP keys, eliminating the need for users to remember passwords and to maintain compatibility between products. However, using this method to generate WEP keys is not as secure as manual assignment.

WEP Key

You can set a maximum of four WEP keys. A WEP key is either 10 or 26 hexadecimal digits (0~9, a~f, and A~F) based on whether you select 64bits or 128bits in the WEP drop-down menu. The R100 Wireless Gateway and ALL of its wireless clients MUST have at least the same default key.

Key Index

The Key Index field lets you specify which of the four encryption keys you use to transmit data on your wireless LAN. As long as the R100 Wireless Gateway or wireless mobile client with which you are communicating has the same key in the same position, you can use any of the keys as the key index. If the R100 and ALL of its wireless clients use the same four WEP keys, select **key rotation** to maximize security. Otherwise, choose one key in common as the key index.

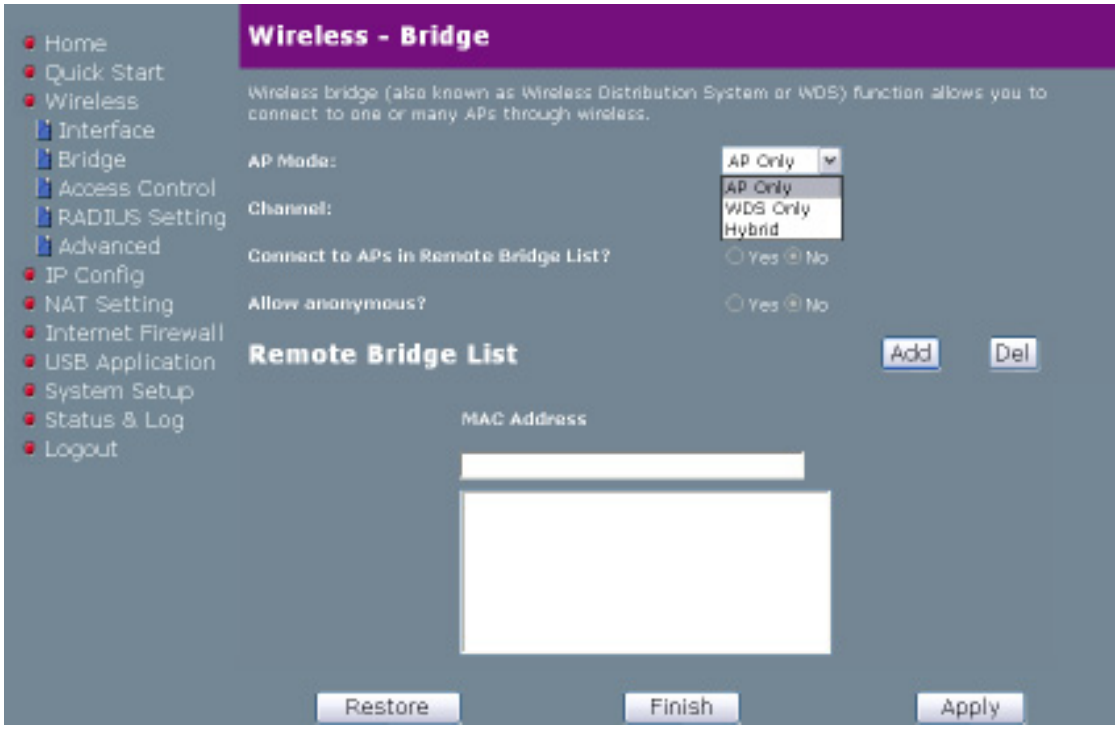
Network Key Rotation Interval

This field specifies the time interval (in seconds) after which a WPA group key is changed. Enter **0** (zero) to indicate that a periodic key-change is not required.

Wireless

Click on the **Wireless** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Bridge



AP Mode

AP (Access Point) Mode configures the R100 Wireless Gateway for a specific application. By default, the R100 is configured as an Access Point which enables wireless mobile clients to connect to a wired Ethernet network. The following options are available from the drop-down list:

AP Only: the R100 Wireless Gateway acts only as an Access Point.

WDS Only: the R100 Wireless Gateway can only communicate with other Access Points.

Hybrid: Hybrid allows you to use the R100 Wireless Gateway both as an access point and as a wireless bridge.

Channel

Both Access Points in Wireless Bridge mode must be set to the same channel.

Connect to APs in Remote Bridge List (Yes/No)

Select **Yes** to connect to access points in the remote bridge list.

Allow anonymous? (Yes/No)

Select **Yes** to allow users without accounts to connect.

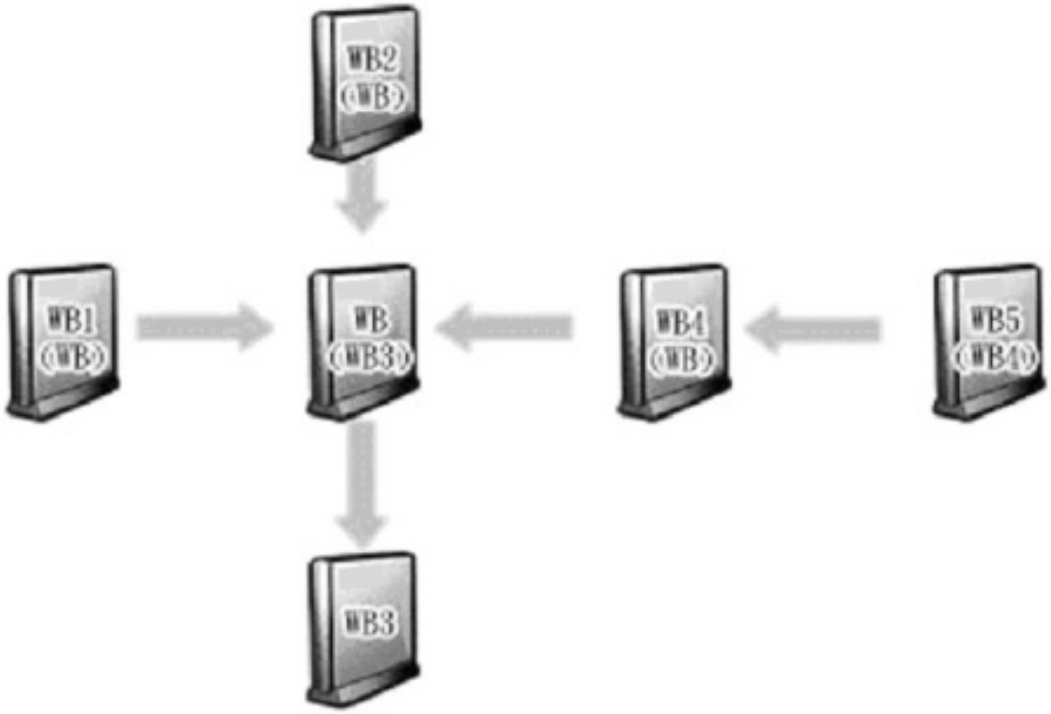
Note: If Connect to APs in Remote Bridge List and Allow Anonymous are both set to No, it means that this AP will not connect with other APs and therefore the AP mode setting will return to AP Only.

Remote Bridge List

MAC Address

Enter the MAC address of the target R100 Wireless Gateway in order to designate which other gateway will be the partner for this gateway.

You can set up your wireless environment as shown in this figure:



Note: The content in brackets "( )" is the MAC address in the Remote Bridge List of the AP. For example, WB1 has the MAC address of WB in its Remote Bridge List.

In this case, there are six R100s and they are linked as wireless bridges. Take one of them, named WB, as an example. WB is not in **AP Only** mode and **Connect to APs in Remote Bridge List** is set as **Yes**, so it can connect to WB3. Meanwhile, **Allow anonymous** is set as **Yes** or **No**, but it has the MAC addresses of WB1, WB2, and WB4 in the **Remote Bridge List**, so it can be connected to by WB1, WB2, and WB4.

Wireless

Click on the **Wireless** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Access Control

MAC Access Mode

Pull down menu items:

Disable (no info required)

Accept (need to input information)

Reject (need to input information)

To add security, the R100 has the ability to only associate with or not associate with wireless mobile clients that have their MAC address entered into this page.

The default setting of **Disable** will allow any wireless mobile client to connect. **Accept** will only allow those entered into this page to connect. **Reject** will prevent those entered into this page from connecting.

Adding a MAC Address

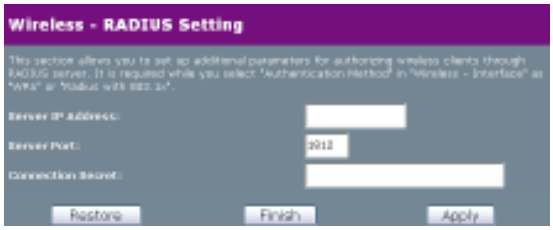
To add a MAC address, enter the 12 hexadecimal characters into the white box next to **MAC Address** and click the **Add** button. The MAC address will be placed in the control list below. Only a total of 31 MAC addresses can be entered into this page so determine which will be the lesser; those you wish to accept or those you wish to reject and click the appropriate MAC Access Mode.

Note: Click the Finish button to save your new settings and restart the R100 Wireless Gateway, or click Save and restart later.

Wireless

Click on the **Wireless** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Radius Setting



This section allows you to set up additional parameters for connection with a RADIUS Server. Values are required for this page when the Authentication Method field in the Wireless - Interface section is set as **WPA** or **Radius with 802.1x**. Refer to *Authentication Method* on page 29.

Server IP Address – specifies the IP address of the RADIUS server to use for 802.1X wireless authentication and dynamic WEP key derivation.

Server Port – specifies the UDP port number used by the RADIUS server.

Connection Secret – specifies the password used to initialise a RADIUS connection.

Note: A RADIUS server is used for remote user authentication and accounting. It is primarily used by Internet Service Providers, but can also be used on any network that needs a centralized authentication function for its workstations.

Wireless

Click on the **Wireless** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Advanced

This section allows you to set up additional parameters for the wireless gateway function. We recommend that you use the default values for all items in this window.

Hide SSID - Selecting **Yes** will hide your AP from those clients that query AP by broadcast packets, so only clients that are aware of the SSID of the AP can connect to it.

Set AP Isolated? - Select **Yes** to prevent wireless clients from communicating with each other.

Data Rate - Select the transmission rate. We recommend selecting **Auto** to maximise performance.

Basic Rate Set - This field indicates the basic rates that wireless clients must support.

Fragmentation Threshold (256~2346) – Fragmentation is used to divide 802.11 frames into smaller pieces (fragments) that are sent separately to the destination. Enable fragmentation by setting a specific packet size threshold. If there is an excessive number of collisions on the WLAN, experiment with different fragmentation values to increase the reliability of frame transmissions. The default value (2346) is recommended for normal use.

RTS Threshold (0~2347) – The RTS/CTS (Request to Send/Clear to Send) function is used to minimize collisions among wireless stations. When RTS/CTS is enabled, the gateway refrains from sending a data frame until another RTS/CTS handshake is completed. Enable RTS/CTS by setting a specific packet size threshold. The default value (2347) is recommended.

DTIM Interval (1~255) – DTIM (Delivery Traffic Indication Message) is a wireless message used to inform clients in Power Saving Mode when the system should wake up to receive broadcast and multicast messages. Type the time interval in which the system will broadcast a DTIM for clients in Power Saving Mode. The default value (3) is recommended.

Beacon Interval (1~65535) – This field indicates the time interval in milliseconds that a system broadcast packet, or beacon, is sent to synchronize the wireless network. The default value (100 milliseconds) is recommended.

Enable Frame Bursting? – This field allows you to enable frame-bursting mode to improve performance with wireless clients that also support frame-bursting.

Enable Radio? - Selecting “Yes” enables the wireless function during user-defined dates and times. Wireless users will not be able to connect on non-selected dates and times.

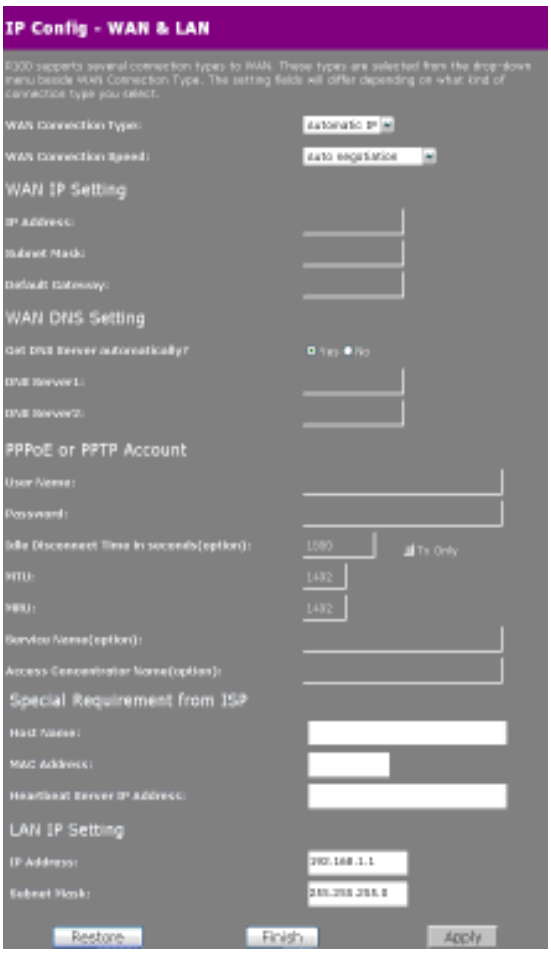
Date to Enable Radio - This field defines the dates that the wireless function will be enabled.

Time of Day to Enable Radio - This field defines the time range that the wireless function will be enabled on each of the selected dates.

Radio Power - This field defines the transmission strength in +dBm. The default value of 19 is recommended.

IP Config

Click on the **IP Config** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.



WAN & LAN

WAN Connection Type

The R100 Wireless Gateway supports four connection types to WAN, including **Static IP**, **PPPoE**, **PPTP** and **Automatic IP**. The WAN setting fields in this page will differ depending on what kind of connection type you select.

WAN IP Setting

These three items are editable only when **WAN Connection Type** is set as **Static IP or PPTP**.

IP Address - This is the IP address of the Wireless Gateway as seen on the remote network. If you leave it blank, the gateway will get an IP address from the DHCP Server automatically.

Subnet Mask - This is the Subnet Mask of the Wireless Gateway as seen on the remote network.

Default Gateway - This is the IP address of the default gateway that allows for contact between the Wireless Gateway and the remote network or host.

WAN DNS Settings

You can set the DNS setting when using any **WAN Connection Type** (Static IP, PPPoE, or Automatic IP).

Get DNS Server automatically? - Normally this is automatic and you would answer **No** to the question about manually assigning DNS. If you are given instructions from your ISP to enter DNS addresses, select **Yes** to manually assign DNS.

DNS Server 1/DNS Server 2 - If you are given instructions from your ISP to enter DNS addresses, select **Yes** to manually assign DNSs and enter the IP addresses here.

PPPoE or PPTP Account

These three items are editable only when **WAN Connection Type** is set as **PPPoE or PPTP**.

User Name - The name of your Internet account provided by your ISP. Some ISPs work with the entire account name along with the hosting domain (such as yourname@yourdomain.com) and others require that you enter only the account name (yourname).

Password - Enter the password for your Internet account.

Idle Disconnect Time in seconds (option) - Enter the number of seconds of inactivity before you are disconnected from your ISP.

PPPoE MTU - This field is shows the Maximum Transmission Unit (MTU) of PPPoE packets.

PPPoE MRU - This field is shows the Maximum Receive Unit (MRU) of PPPoE packets.

Enable PPPoE Relay - Enable PPPoE Relay allows stations in a LAN to setup individual PPPoE connections that are passed through NAT. It is also known as PPPoE multi-session.

Special Requirement from ISP

The following two items may be specified by some ISPs. Check with your ISP and fill them in if required.

Host Name – Fill this in if required by your ISP.

MAC Address – Fill this in if required by your ISP.

Heart-Beat Address – Fill this in if required by your ISP.

LAN IP Setting

IP Address - This is the IP address of the Wireless Gateway as seen in your local network. The default value is 192.168.1.1.

Subnet Mask - This is the Subnet Mask of the Wireless Gateway as seen in your local network. The default value is 255.255.255.0.

IP Config

Click on the **IP Config** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

DHCP Server

DHCP (Dynamic Host Configuration Protocol) is a protocol that dynamically assigns IP addresses to computers in a network. Enabling the DHCP server allows the gateway to assign IP addresses to PCs or Notebooks that are set to obtain an IP address automatically. The R100 supports up to 254 IP addresses for your local network

Enable the DHCP Server? – This field allows you to enable or disable DHCP server in the Wireless Gateway. The default value is **Yes.**

Domain Name - This field indicates the Domain Name to provide to clients that request an IP Address from the DHCP Server.

IP Pool Starting Address - This field specifies the first address in the pool to be assigned by the DHCP server in your local network.

IP Pool Ending Address - This field specifies the last address in the pool to be assigned by the DHCP server in your local network.

Lease Time - This field specifies the amount of connection time a network user is given with their current dynamic IP address.

DNS and WINS Server Setting

DNS Server 1/DNS Server 2 - This field indicates the IP address of the DNS that provides IP Addresses to clients which request one from the

WINS Server - The Windows Internet Naming Service manages the interactions of each PC with the Internet. If you use a WINS server, enter the IP Address of the server here.

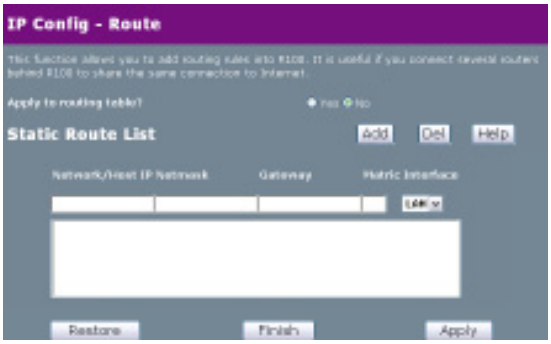
Assign IP Address Manually - This field allows you to manually assign a static IP address to a system on the Network.

Manually Assigned IP List - To manually assign a static IP address to a system, enter the **MAC Address** of the system's network device, then the desired IP Address for the device and click on **Add**. The devices with manually assigned IP addresses will be added to the list. Te remove a device from this list, highlight it and click **Del**.

IP Config

Click on the **IP Config** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Route



A route is a possible path from a given host to another host or destination. If you append one or more routers behind the R100 Wireless Gateway to share the same connection to the Internet, you need to insert predefined routing rules , called static route, into the gateway. This way the wireless gateway will know which router the packets from the Internet with different destination IP addresses can be delivered to.

Apply to routing table? – Selecting **Yes** applies all those rules in the Static Route List to the routing table.

Static Route List

Network/Host IP – This stands for the destination IP address of the network or host. It could be an IP address, such as 192.168.1.1 or a range of IP addresses, such as 192.168.0.0 or 192.0.0.0. If a packet is sent/received with a destination IP address that matches this field or is within the ranges of this field, it will route to the device set in the Gateway field.

Netmask – this defines the netmask of an added network route.

Gateway - This field stands for the IP address of the gateway where packets are routed. The specified gateway must be reachable first. It means you have to set up a static route to the gateway beforehand.

IP Config

Click on the **IP Config** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Miscellaneous

Enable UPnP – If you select **Yes** to enable UPnP, it will allow your Wireless Gateway to be found automatically by systems, such as Windows XP. It also allows these systems to automatically configure the Wireless Gateway for various Internet applications, such as gaming and video conferencing.

Remote Log Server – This feature allows you to assign a remote server to record log messages from the R100. If you leave it blank, the system will only record up to 1024 messages on the R100.

Time Zone – This field indicates the time zone where you are located.

NTP Server – NTP Server is a time server on the Internet that allows the wireless gateway to synchronise the system time with it. You can keep the default IP address or set to the IP address of a NTP server that you prefer.

DDNS Setting

Dynamic DNS - DDNS allows a user to export a host name to the Internet through a DDNS service provider. Each time the Wireless Gateway connects to the Internet and gets an IP address from the ISP, this function will update your IP address to the DDNS service provider automatically, so that any user on the Internet can access the R100 or servers behind it through a predefined name registered at the DDNS service provider.

Enable the DDNS Client? – Select **Yes** to enable DDNS update, then each time your IP address to WAN is changed, the information will be updated to the DDNS service provider automatically.

Server – Currently, clients connecting to DynDNS or TZO are embedded in the wireless gateway. You can click the Free Trial link behind this field to start with a free trial account.

User Name or E-Mail Address – Enter your username here to log in to the Dynamic-DNS service.

Password or DDNS Key – Enter your password here to log in to the Dynamic-DNS service.

Host Name –This field represents the Host Name you registered with the Dynamic-DNS service and expect to be seen on the Internet.

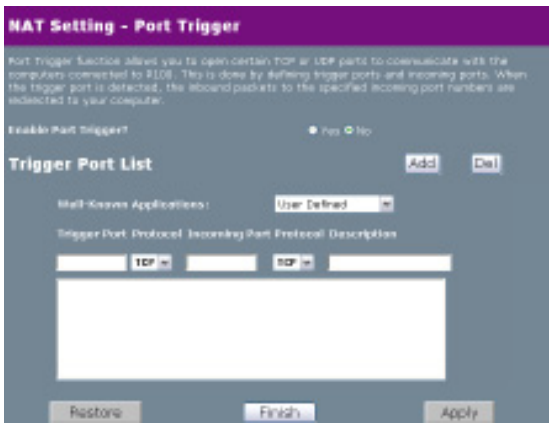
Enable wildcard? – This field determines whether an incorrectly entered domain name is also redirected to your IP address.

Update Manually –This button allows you to update the DDNS database manually. It is available only when automatic DDNS update has failed. You can get the current status of the DDNS update from the System Log.

Note: Currently, clients connected to DynDNS or TZO are embedded in the R100 Wireless Gateway. You can click the Free Trial link behind each DDNS service provider to start with a free trial account.

NAT Settings

Click the **NAT Settings** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.



Port Trigger

This function allows you to open certain TCP or UDP ports to communicate with the computers connected to the R100. This is done by defining trigger ports and incoming ports. When the trigger port is detected, the inbound packets to the specified incoming port numbers are redirected to your computer.

Enable Port Trigger? - Selecting **Yes** applies all the rules in the Port Trigger List to the Wireless Gateway.

Well Known Applications - This selects protocols associated with certain applications that can be used with Port Trigger.

Trigger Port List

Trigger Port - This field allows you to enter the port or port range of outgoing packets that will trigger port redirect.

Protocol - This field allows you to select the protocol of outgoing packets.

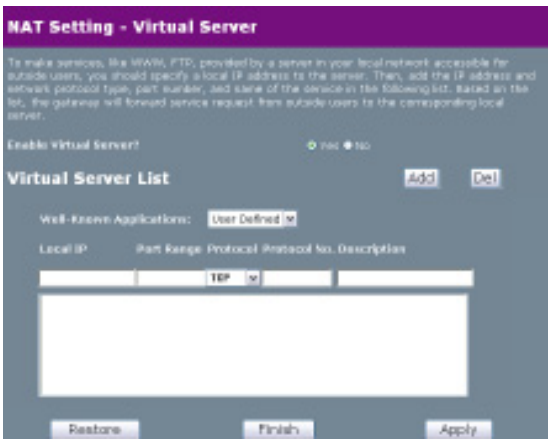
Incoming Port - This field allows you to enter the port or port range of incoming packets that will be redirected to your computer.

Description –This field allows you to record what this rule is used for.

NAT Settings

Click the **NAT Settings** button on the menu to reveal the submenu. Follow the instructions to set up the R100 wireless Gateway. Tips are given when you move your cursor over each item.

Virtual Server



To make services, like WWW, FTP, provided by a server in your local network accessible for outside users, you should specify a local IP address to the server. Then, add the IP address and network protocol type, port number, and name of the service in the following list. Based on the list, the gateway will forward service requests from outside users to the corresponding local server.

Enable Virtual Server?– Selecting **Yes** applies all those rules in Virtual Server List to the Wireless Gateway.

Well Known Applications - This selects applications or protocols that can be used with Virtual Server.

Virtual Server List

Local IP – This field stands for the destination IP address that you want to redirect the matched packet to.

Port Range– This field stands for a port number or a range of ports. If the destination port of incoming packets matches the port, or is within the port range, the incoming packets will be redirected to the IP address specified in **Local IP.**

Protocol– This defines the protocol used by incoming packets.

Description –This field allows you to record what this rule is used for.

NAT Settings

Click the **NAT Settings** button on the menu to reveal the submenu. Follow the instructions to set up the R100 wireless Gateway. Tips are given when you move your cursor over each item.

Virtual DMZ

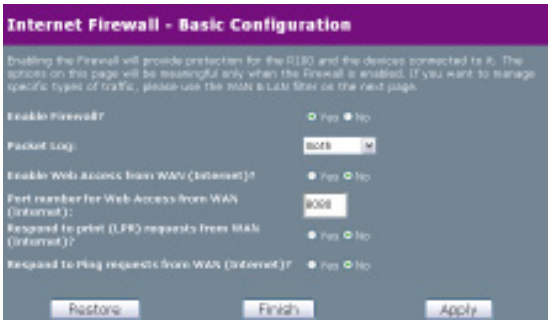
Virtual DMZ allows you to expose one computer to the Internet, so that all inbound packets will be redirected to the computer you set. It is useful when you run some applications that use uncertain incoming ports. Please use it carefully.

IP Address of Exposed Station – This field stands for the IP address of the computer that you want to expose to the Internet.

Internet Firewall

Click the **Internet Firewall** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Basic Configuration



Enabling the Firewall provides protection for the R100 and the devices connected to it. The options in this section will be active only when the Firewall is enabled. If you want to manage specific types of traffic use the WAN & LAN filter on the next page.

Enable Firewall? - Select **Yes** to enable the firewall on the R100.

Packet Log - Indicates what kind of packets from the WAN will be logged.

Enable Web Access from WAN(Internet)? - This feature allows you to configure the R100 from a remote location.

Port number for Web Access from WAN (Internet): - Determines the port number you connect to the R100 with to configure it from a remote location (e.g via the internet)

Respond to print(LPR) requests from WAN (Internet)? - Allows you to set up the R100 as a print server.

Respond to Ping requests from WAN(Internet)? - This allows the R100 to respond to ping requests from the internet.

Internet Firewall

Click the **Internet Firewall** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

WAN & LAN Filter

The WAN & LAN Filter allows you to block specified packets between the LAN and the WAN. First, you define the date and time that the filter will be enabled. Then, you choose the default actions for the filter in both directions and insert the rules for any exceptions.

LAN to WAN Filter (Outgoing Traffic)

Enable filter? – Selecting **Yes** enables the LAN to WAN filter.

Days on which to enable filter – This field defines the days that the LAN to WAN filter will be enabled.

Start and end times of each day on which to enable the filter – This field defines the time interval that the LAN to WAN filter will be enabled.

Default policy (traffic not listed in Filter Table) – The Default policy specifies the handling of all traffic NOT listed in the Filter table. Choosing **ACCEPT** means that traffic listed in the Filter Table will be dropped, all other traffic will be accepted. **DROP** means that traffic listed in the Filter table will be accepted, all other traffic will be dropped

Filtered ICMP (LAN to WAN) packet types – This field defines a list of LAN to WAN ICMP packet types that will be filtered. For example, if you would like to filter Echo (type 8) and Echo Reply (type 0) ICMP packets, you need to enter a string with numbers separated by a space, such as, "0 5".

WAN to LAN Filter

Date to Enable WAN to LAN Filter – This field defines the dates that WAN to LAN filter will be enabled.

Time of Day to Enable WAN to LAN Filter – This field defines the time interval that WAN to LAN filter will be enabled.

Packets (WAN to LAN) not specified will be – This field defines those WAN to LAN packets which are not specified in WAN to LAN Filter Table will be accepted or dropped.

Filtered ICMP (WAN to LAN) packet types – This field defines a list of WAN to LAN ICMP packets type that will be filtered. For example, if you would like to filter Echo (type 8) and Echo Reply (type 0) ICMP packets, you need to enter a string with numbers separated by blank, such as, "0 5".

LAN to WAN Filter Table and WAN to LAN Filter Table

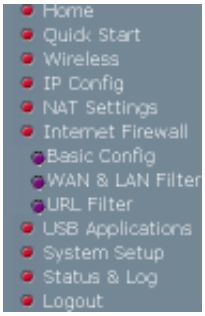
Well known Applications - Allows user to filter the use of certain applications that can be accessed over the Internet.

Source/Destination IP Address - For source or destination IP address, you can input a specific IP address, such as **192.168.122.1**, or IP addresses within one subnet, such as **192.168.123.***, or **192.168.*.***, or all IP addresses as ***.

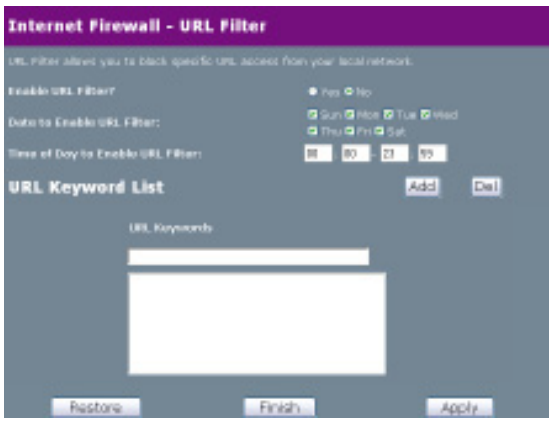
Source/Destination Port or Port Range - For source or destination port range, you can input a specific port, such as **95**, or ports within a range, such as **103:315**, **>100**, or **<65535**.

Protocol – This field indicates the protocol type of packets this rule will filter.

Internet Firewall



Click the **Internet Firewall** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.



URL Filter

The URL Filter allows you to block specific URL access from your local network.

Enable URL Filter? – Selecting **Yes** enables the URL Filter and applies the rules in the URL Keyword List to the wireless gateway.

Date to Enable URL Filter– This field defines the days that theURL filter will be enabled..

Time of Day to Enable URL Filter – This field defines the time intervals that the URL filter will be enabled**.**

URL Keyword List

URL Keyword – If the URL filter is enabled and URL access contains the keyword specified in the URL Keyword List, the DNS mapping of this URL would be blocked.

USB Applications

Click the **USB Applications** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

FTP Server

FTP Server Mode – The R100 features an embedded FTP server for USB storage. Before using the FTP server, ensure that your USB device fulfills the following requirements.

- The FTP server only works with supported USB devices. Supported devices are listed on the Mitsubishi Electric Australia Web site at http://www.MitsubishiElectric.com.au.
- The R100 gateway supports read/write functions for FAT or FAT32 file systems and read-only functions for NTFS (NT file system) with compressed or uncompressed files. **Encrypted files are not supported.** If your USB storage device is formatted as a FAT or FAT32 file system, configure the FTP server to work from the first partition (partition 0).
- Devices with multi-partitions will be detected; however, only super users and anonymous users can access devices configured with multi-partitions. Other users can only access the directory /ftp_pub or / ftp_pvt/username/ in partition 0.

Note: The R100 only supports USB Storage devices which are recognised as a "Mass Storage Device". It does not support other types of USB to IDE devices. Most compatible USB storage devices are plug and play; you do not have to power off the gateway when connecting these devices, however, USB external storage cases for IDE devices require you to restart the gateway after you connect them.

The following describes the available fields in the FTP Server screen.

Force to Eject USB Disk – When this item is enabled, pressing the "Eject" button will allow the gateway to write the cached data back to the USB disk before you remove the USB disk. Remove the USB Disk only after you press the button and get the refreshed Web page. Otherwise, you will lose the cached data.

Enable FTP Server? – Select **Yes** to enable the ftp server daemon when you have connected the USB storage device to the gateway.

Allow Anonymous User to Login? – Select **Yes** to enable an anonymous user account with all access rights. The User name is *anonymous* or *ftp*. (No password is required.)

Login as Anonymous: click ***Login*** to log in to this FTP Server with an Anonymous User account to access the USB Disk.

Allow Super User to Login? – Select **Yes** to enable a super user account with all access rights. The user name and password are the same as the network administrator.

Login as Super User: click ***Login*** to log in to this FTP Server with a Super User account to access the USB Disk.

FTP Port – Type the port number to be used by the FTP server. The default is 21.

Maximum Users Allowed to Log in – Sets the maximum number of users allowed to simultaneously log into the server.

Login Timeout in Seconds – This field enables you to terminate user connections after users have been connected for a specified amount of time.

Stay Timeout in Seconds –This field enables you to terminate user connections after users log in but stay idle for a specified amount of time.

User Account List

Setting

The User Account List enables you to create user profiles, set user passwords, set the maximum number of times a user can log in, and set user access rights

User Name – Type the user name for the FTP account.

Password – type the password of the FTP account. Leave the field blank or type an asterisk (*) for anonymous access.

Note: The FTP Server only supports "No encrypted password" protection. Clients connecting with MD4 or MD5 will not be allowed.

Max. Login – This field indicates the maximum logins allowed with this FTP account. Leave the field blank or type zero (0) to allow unlimited login.

Rights – This field indicates the rights assigned to this FTP account:

Read/Write/Erase: Users attached to this account can access the USB storage device, and read, write, and erase files on the drive.

Read/Write: Users attached to this account can access the USB storage device, and read or write to the drive; however, users cannot erase files on the drive.

Read Only: Users attached to this account can access the USB storage device, and read files on the drive; however, users cannot write to the drive or erase files.

View Only: Users attached to this account can access the USB storage device, and view files only.

Private: Users attached to this account can access a private directory in the USB storage (partition1:/ftp_pvt/User Name), and are allowed all access privileges (Read/Write/Erase/View). Please see User Account and Privileges for details.

User Account and Privileges

If you have a USB disk with 3 partitions*, partition 1 is FAT32, partition 2 is FAT, and partition 3 is NTFS, the FTP directories will be constructed as follows:

\ : Files and directories in partition 1. “Super user” or “anonymous” are allowed to access.

\partition1 : Files and directories in partition 2. “Super user” or “anonymous” are allowed to access.

\partition2 : Files and directories in partition 3. “Super user” or “anonymous” are allowed to read only.

\ftp_pub : User rights set as Read/Write/Erase, Read/Write/Read Only, or View Only, are allowed to share this directory.

\ftp_pvt : User rights set as Private, are only allowed to access the directory with the user name.

The account’s root directory and its access rights on the FTP server are defined as follows:

Account	Condition	Root Directory	Rights
Anonymous	“Allow Anonymous User to Login” is enabled	\	Read/Write/Erase
Super User	“Allow Super User to Login” is enabled	\	Read/Write/Erase
[user]	Rights is set as “Read/Write/Erase”	\ftp_pub	Read/Write/Erase
[user]	Rights is set as “Read/Write”	\ftp_pub	Read/Write
[user]	Rights is set as “Read Only”	\ftp_pub	Read Only
[user]	Rights is set as “View Only”	\ftp_pub	View Only
[user]	Rights is set as “Private”	\ftp_pvt\[user]	Read/Write/Erase

*** The R100 can manage up to 6 partitions, but if NTFS is used on partition 1, the system will not be able to create related system directories, such as ftp_pub or ftp_pvt for the FTP server. In this case, only “anonymous” or “super user” are allowed to read data in partition 1, however they will not be able to see any other partitions.**

Banned IP List

Setting

This screen enables you to enter IP addresses that you do not want users connected to the gateway to access.

IP Address – This field indicates the IP address you want to ban. Enter a specific IP address, such as *192.168.1.5*, or IP addresses within one subnet, such as *192.168.*.*, or *192.168.1.**.

Client Setting

Users can connect to the FTP server using a Web based browser such as IE or Netscape. To connect to the server, type the FTP URL in the browser address bar: ftp://username@[IP address or host name of the gateway]/

Using other FTP-protocol programs, you can connect to the FTP Server using either PASV or PORT.

Note: The FTP Server only supports "No encrypted password" protection. Clients connecting with MD4 or MD5 will not be allowed access.

USB Applications

Click the **USB Applications** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are displayed when you move your cursor over an item.

Note: Before using the Web Camera function, refer to the USB Web Camera support list on the Mitsubishi Electric Web site at the following address: http://www.MitsubishiElectric.com.au.

Web Camera

Web Camera Setting – The R100 Wireless Gateway implements several applications for a USB Web Camera, enabling you to capture images and send them over the Internet.

Enable Web Camera - Sets the camera to be either disabled, accessible on the LAN, or be accessible on the LAN and WAN.

Web Camera Mode – Select the appropriate camera mode from the drop-down list. ActiveX Only enables users to execute ActiveX clients on a Windows IE platform to get the best image quality. ActiveX and Refresh enables users to get a basic image on both IE and Netscape platforms.

Web Camera Driver – When you plug a supported Web Camera into the wireless gateway, the appropriate driver is selected automatically.

Image Size – Select the image size from the drop down list. 320 x 240 provides a larger image. 160 x 120 provides faster transmission. Click ***Preview*** to see how your web camera appears.

Sense Level – This field indicates the sensitivity at which image movement is detected.

Refresh Time in Seconds – This field indicates the time interval in seconds in which the system reloads images. The range of values is 1~65535.

Caption String – This field indicates the text string that is displayed on your Webcam page.

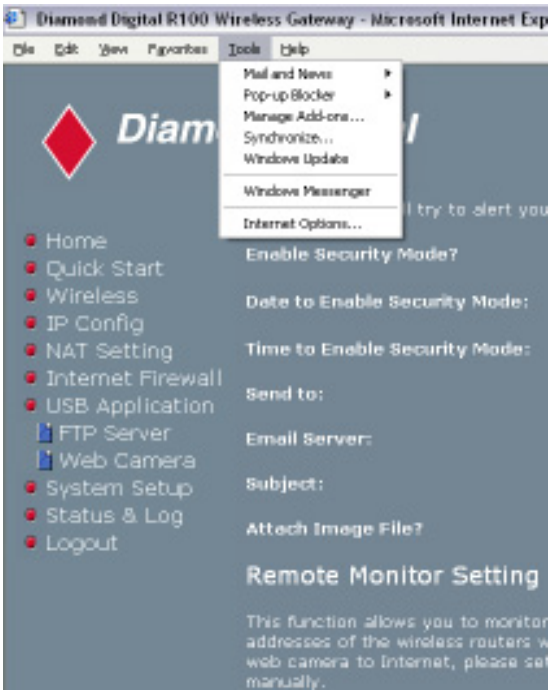
HTTP Port - Indicates the port that the server listens with to communicate with ActiveX clients.

ActiveX Port - Indicates the port that the server listens with to communicate with ActiveX clients.

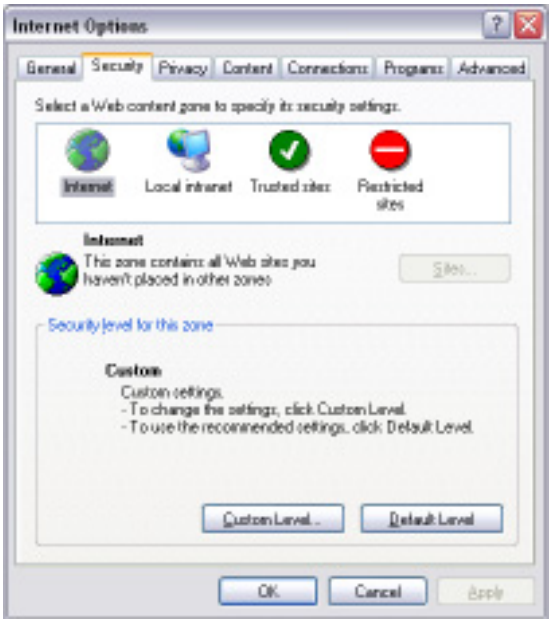
Client Setting

For clients that use Netscape or other browsers that don't support ActiveX, you don't need additional settings to view an image in the browser window. For clients that use IE 5.0 or above, you need to set IE to get a better support on ActiveX as following:

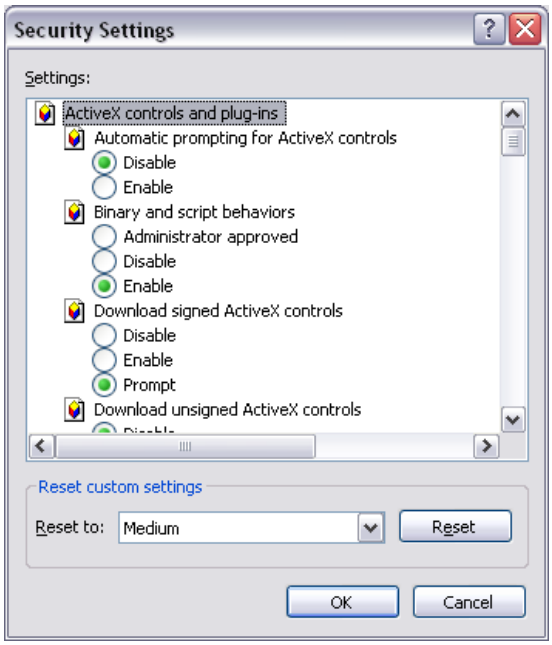
1. Open Internet Explorer 5.0 or above.
2. Select **Tools->Internet Options->Security->Local Intranet-> Custom Level.**
3. Check that your settings are as follows:



Go to **Internet Options** from the **Tools** menu.

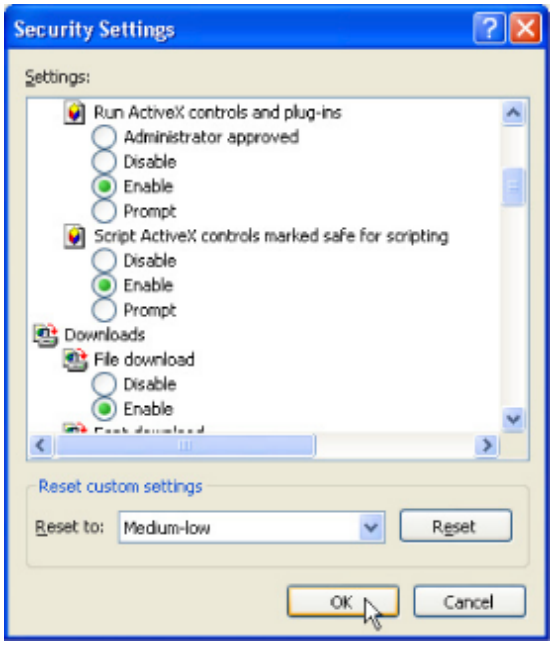


Click on the **Security Tab**, then click on **Local Intranet** settings and select the **Custom Level** option.

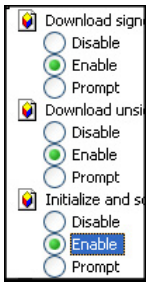


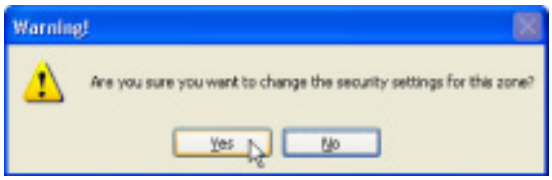
Enable the three ActiveX controls and plug-ins.

By default, these items are disabled and will prevent the R100 Wireless Gateway's web camera function from working.



By default, these three items should already be enabled. Enable them if they have been changed.





Click **Yes** to change the security settings.

Web Camera vs. DDNS

Cooperating with a DDNS, your can monitor your home environment through the Internet, even when a dynamic WAN IP address is applied.

Security Mode Setting

This function allows you to monitor an environment through a Web Camera. If there is any motion detected, the R100 will try to alert you via email.

Enable Security Mode? – Selecting **Yes** enables the Security Function.

Date to Enable Security Mode – This field defines the days that the Security Mode will be enabled.

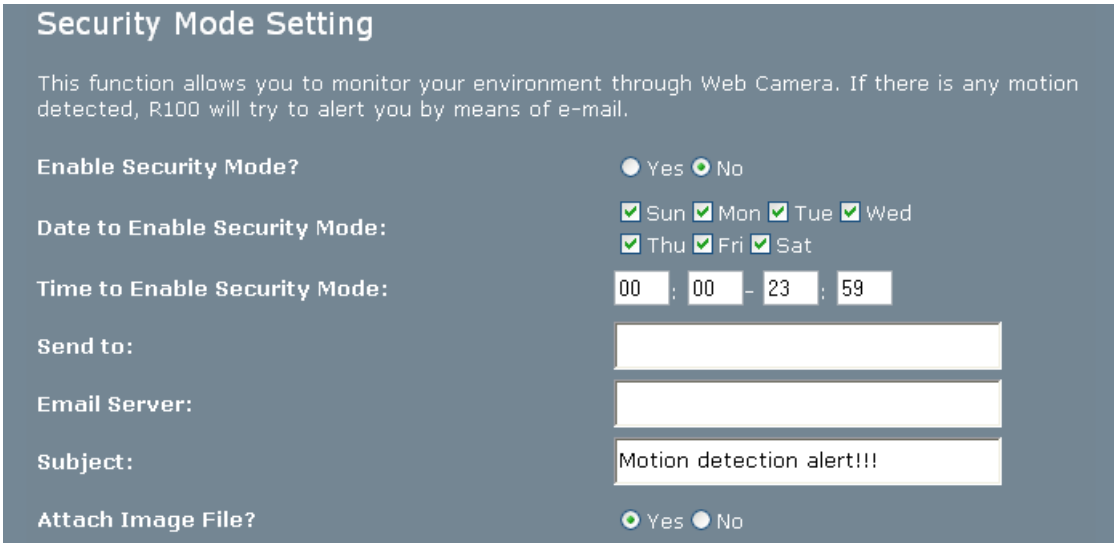
Time to Enable Security Mode – This field defines the time interval that the Security Mode will be enabled.

Send to – This field indicates the email address to send alert messages to.

Email Server – This field indicates the email server where you want the email delivered to. If you leave this field blank, the Wireless Gateway will find a Mail Exchanger from your email address in the **Send to** field.

Subject –This field allows you to edit the subject of the email.

Attach Image File? –This field allows you to attach the detected image file to the email.

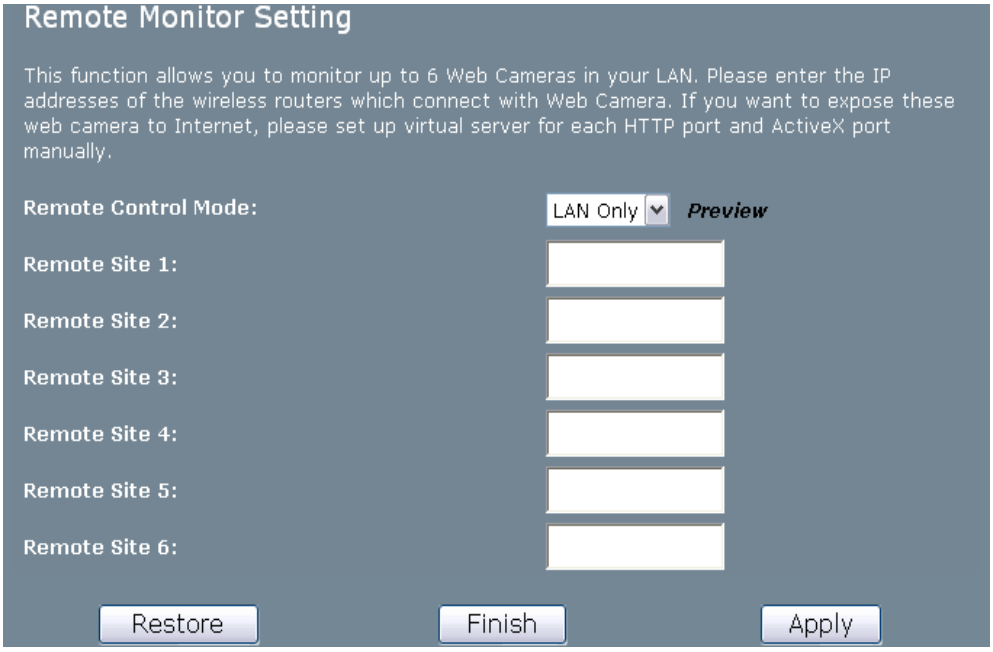

Security Mode Setting
This function allows you to monitor your environment through Web Camera. If there is any motion detected, R100 will try to alert you by means of e-mail.
Enable Security Mode?
Yes No
Date to Enable Security Mode:
Sun Mon Tue Wed
Thu Fri Sat
Time to Enable Security Mode:
00 : 00 - 23 : 59
Send to:
Email Server:
Subject:
Motion detection alert!!!
Attach Image File?
Yes No

Remote Monitor Setting

This function allows you to monitor up to 6 Web Cameras in your LAN. You can enter the IP addresses of R100's which connect with the Web Camera.

Remote Control Mode – LAN Only will only all you to monitor Web Cameras within a LAN environment.

Remote Site 1-6 – This field contains the IP addresses and port numbers of the Remote Sites. They should be entered as **[IP Address]:[Connection Port]**.


Remote Monitor Setting
This function allows you to monitor up to 6 Web Cameras in your LAN. Please enter the IP addresses of the wireless routers which connect with Web Camera. If you want to expose these web camera to Internet, please set up virtual server for each HTTP port and ActiveX port manually.
Remote Control Mode:
LAN Only
Preview
Remote Site 1:
Remote Site 2:
Remote Site 3:
Remote Site 4:
Remote Site 5:
Remote Site 6:
Restore
Finish
Apply

Preview

Click **Preview** behind **Remote Control Mode** to see the view of all the web camera sites you set in Remote Site.

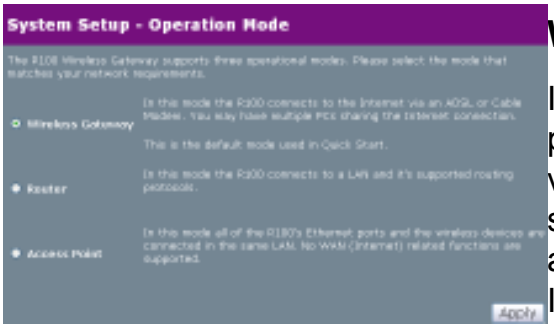
Note: The R100 supports USB hub functionality. But, you are not recommended to run more than one USB application on the R100 at the same time. It may run out of memory sometimes.

System Setup

Click the **System Setup** button on the menu to reveal the submenu. Follow the instructions to setup the Wireless Gateway. Tips are given when you move your cursor over each item.

Operation Mode

The R100 Wireless Gateway supports three operation modes to meet different requirements. Please select the mode that matches your networking requirements.



Wireless Gateway

In Wireless Gateway mode, the WAN port is assumed to attach to the Internet via a Cable or DSL modem. This allows several wireless clients and PCs attached to the LAN ports to share the Internet connection to the ISP.

Technically, gateway mode means, NAT is enabled and WAN connection is allowed by using PPPoE, DHCP client, or static IP. In addition, some features, which are useful for home users, such as UPnP and DDNS are supported.

Router

In Router mode, we assume you're using the Ethernet port to connect to a LAN in your company. This way, you can set up a routing protocol to meet your requirements in the office.

Technically, router mode means NAT is disabled, static and dynamic routing protocol are allowed to be set, and WAN connection is allowed only by using a static IP.

Access Point

In Access Point mode, the gateway acts as a bridge between the PCs attached to all Ethernet ports (LAN) and the clients on the wireless LAN (WLAN). Both the LAN and WLAN will be on the same IP subnet, sharing the same address range. The internal NAT is disabled in this mode

Technically, access point mode means NAT is disabled, and one WAN port and four LAN ports are bridged together.

By default, the R100 Wireless Gateway operates in Access Point mode.

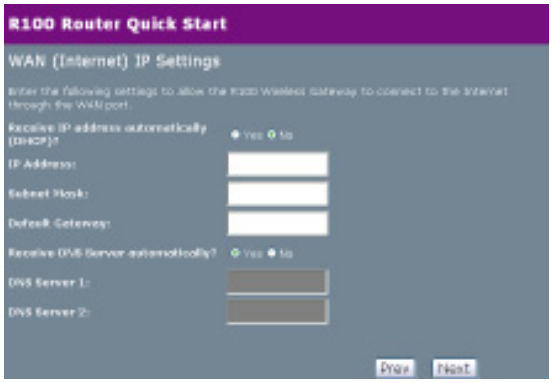
Router Mode

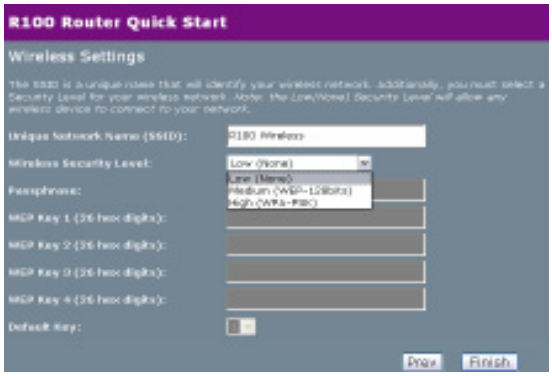
After selecting **Router** mode and clicking **Apply**, select **Home**, then click on the **Quick Start** link to enter the **Quick Start** page of the Router mode. Follow the instructions to set up the R100 Wireless Gateway.

Note: The Wireless, IP Config, Internet Firewall, and Web Camera settings in Router Mode are the same as the settings in Home Gateway Mode. To learn more about these settings, please refer to the Home Gateway Mode in this user's manual.

Quick Setup in Router Mode

After selecting **Router** mode and clicking **Apply**, select **Home**, then click on the **Quick Start** link to enter the **Quick Start** page of the Router mode. Follow the instructions to set up the R100 Wireless Gateway as a Router.





If you would like to perform other settings, click the desired button on the menu to reveal the submenu. Follow the instructions to set up the gateway. Tips are given when you move your cursor over each item.

AP Mode

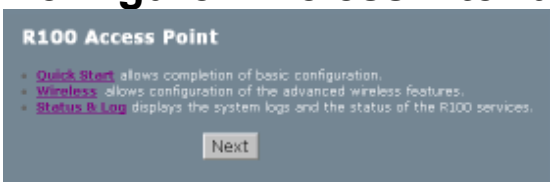
After selecting **Access Point** mode and clicking **Apply,** select **Home**, then click on the **Quick Start** link to enter the **Quick Setup** page of the Access Point mode. Follow the instructions to setup the R100 Wireless Gateway.

Note: The Wireless settings are the same as the settings in the Wireless Gateway Mode. To learn more about these settings, please refer to the Wireless Gateway Mode in this user's manual.

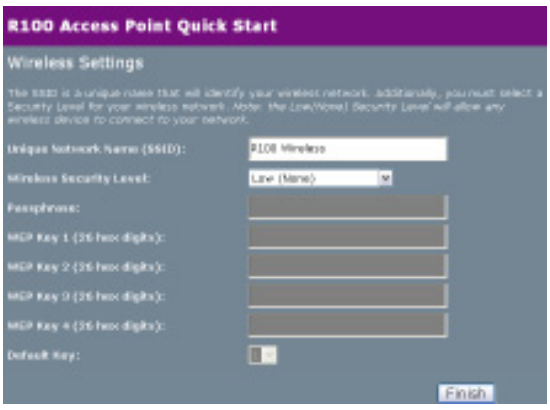
Quick Setup in Access Point Mode

Click **Quick Setup** to enter the Quick Setup page. Follow the instructions to set up the R100 Wireless Gateway.

Configure Wireless Interface


R100 Access Point
Quick Start allows completion of basic configuration.
Wireless allows configuration of the advanced wireless features.
Status & Log displays the system logs and the status of the R100 services.
Next

First step for setting your wireless interface is to give it a name, called the SSID. In addition, if you would like to protect transmitted data, please select WEP protection and assign WEP keys for data transmission. Your wireless setting will be applied to all interfaces.



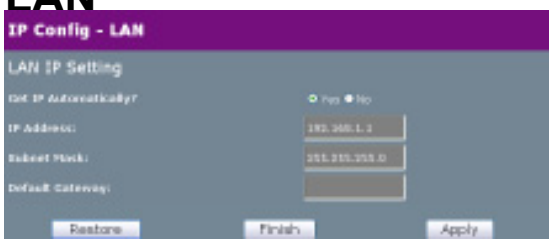
(See next few pages for item descriptions.)

If you would like to perform other settings, click a button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.

IP Config in Access Point Mode

Click the **IP Config** button on the menu to reveal the submenu. Follow the instructions to setup the R100 Wireless Gateway. Tips are given when you move your cursor over each item.

LAN



Selection items:

- **Yes** (no info required)
- **No** (need to input information)

Click **Apply** or **Finish** if you make any changes.

Get IP Automatically

Select **Yes** (default) or No to get the IP address automatically from a DHCP server.

Yes

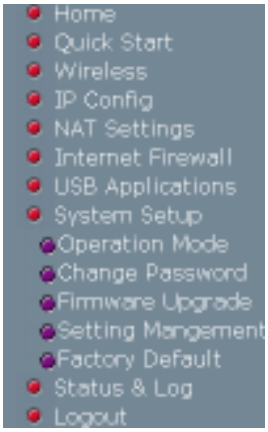
This parameter determines if the R100 will send out a DHCP request during bootup. If you have a DHCP server on the network, set this option so that the R100 can receive an automatic IP address assignment.

If you have a DHCP (Dynamic Host Configuration Protocol) server on the network, then the DHCP server will automatically assign the R100 an IP address when the gateway is powered up. To determine what IP address has been assigned to the R100, review the IP address on the **Status** page available on the **Main Menu**.

No

The R100 also accepts a static IP address. You may manually configure the IP address and subnet mask on the **IP Config** page. Enter an IP address and a subnet mask in the field provided to assign the R100 a static IP address. If you don't know your Gateway setting, leave it empty (not 0.0.0.0).

System Setup



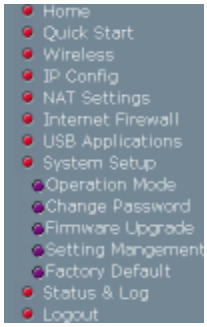
Click the **System Setup** button on the menu to reveal the sub menu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.

Change Password

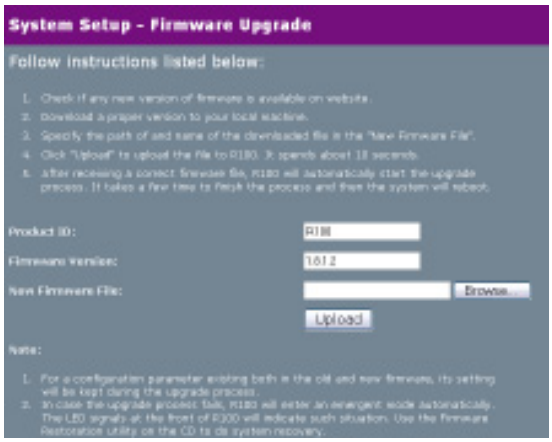
This page will allow you to change the default password **admin** (lower case) to any password of your choice. You can enter any usable characters between 1-16 characters long (cannot be left blank). Click the **Save** button to save your new password. If you forget the gateway's password, you can reset the R100 to it's factory settings (see troubleshooting).

Note: The password is case sensitive.

Firmware Upgrade



Click the **System Setup** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.



Uploading Firmware
The Wireless Gateway is updating - please wait until the R100 home page is displayed.
The upload process will take approximately 80 seconds.

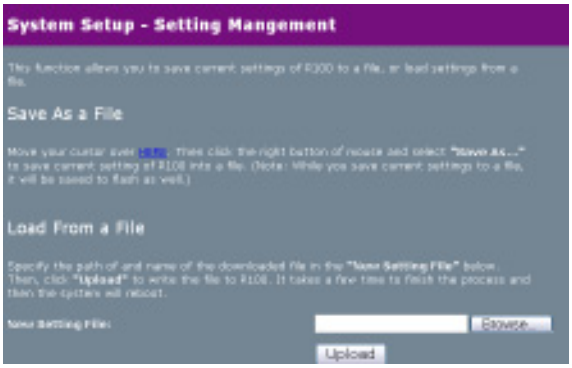
This page reports the Firmware version installed in the R100. Periodically, a new Firmware will become available for the R100 on Mitsubishi Electric's Website. You can update the R100's Firmware using the Firmware Upgrade page under the Advanced Setup menu of the Web Manager. If you are experiencing a problem with your R100 Gateway, a Technical Support representative may ask you to give your device's Firmware version.

The firmware upgrade takes approximately 60 to 90 seconds. When the firmware upgrade is completed, you will be directed to the home page.

System Setup

Click the **System Setup** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.

Setting Management



This function allows you to save current settings to a file, or load settings from a file.

Save As a File

Move your cursor over the **HERE** link on the web page. Then click the right button of the mouse and select **Save Target As...** to save the current settings into a .cfg file.

Note: When the current settings are saved to file, they will be saved to flash as well.

Load From a File

Specify the path and name of the downloaded file in the **New Setting File** section. Then, click **Upload** to write the file to the R100. It takes a few minutes to finish the process, and once done the device will reboot.

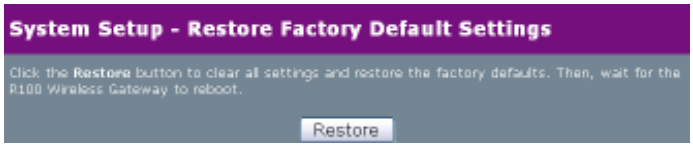
New Setting File

Click **Browse** to locate the file.

System Setup

Click the **System Setup** button on the menu to reveal the submenu. Follow the instructions to set up the R100 Wireless Gateway. Tips are given when you move your cursor over each item.

Factory Default


System Setup - Restore Factory Default Settings
Click the Restore button to clear all settings and restore the factory defaults. Then, wait for the R100 Wireless Gateway to reboot.
Restore

Restoring Factory Default Settings

Web Manager

You can reset all settings to their factory defaults through the web manager using the **Factory Default** page. Click the **Restore** button and wait about 30 seconds before re-accessing the R100.

Hardware

You can reset all settings to their factory defaults manually by pushing the **Restore** button in the hole on the back of the R100 while it is ON. Use a pen or straightened paper clip to hold the **Restore** button depressed over 5 seconds until the power LED on the front of the R100 starts blinking slowly.

You will be notified when factory default settings are restored while using the web manager.

Status & Log

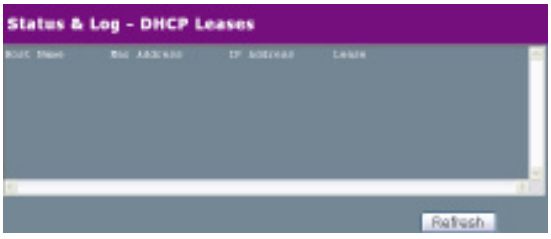
The Status & Log pages give you all the necessary information for monitoring the R100 Wireless Gateway's condition.

Status

System information for WAN, LAN, and Printer are displayed on this page. The buttons for the WAN interface allow you to release or renew the IP address if your WAN Connection Type is set as Automatic IP. The Remove button for Printer Server is used to remove printing jobs manually.

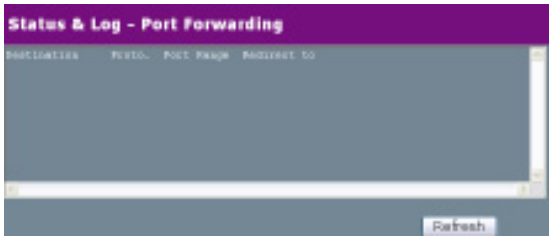
Wireless

Wireless clients, who connect to the R100 using the 802.11g standard, are displayed on this page. You can use the Radio Control buttons to manually disable or enable the wireless function for these clients.



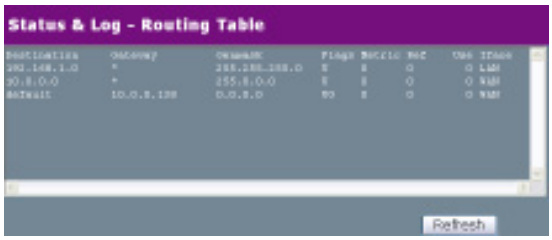
DHCP Leases

Clients who request an IP address from the DHCP server of your local area network, or DHCP server in your wireless network behind a Wireless Firewall are displayed on this page.



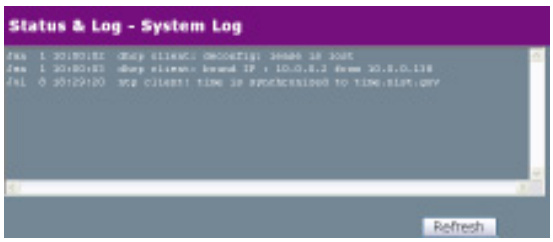
Port Forwarding

Information of port forwarding rules, which are added by using Port Trigger, Virtual Server, Virtual DMZ or UPnP, are displayed in this page.



Routing Table

Static routing rules or dynamic routing rules updated by RIP are displayed in this page.



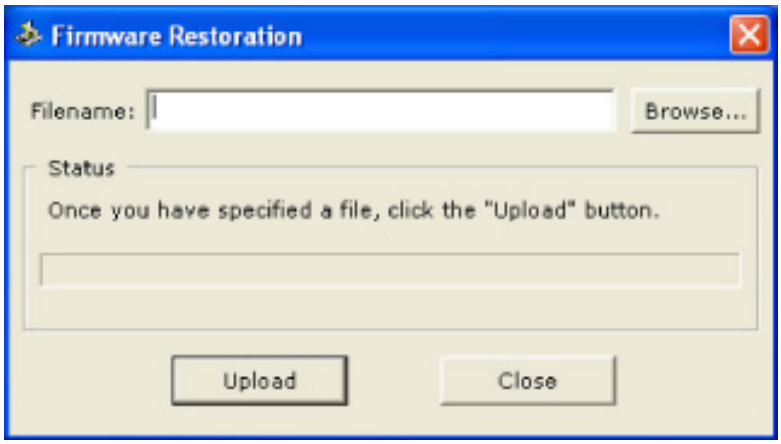
System Log

The last 1024 system log entries are recorded on this page.

Firmware Restoration

This utility will automatically search out failed R100 Wireless Gateways and upload a firmware that you specify. The process takes about 3 to 4 minutes and during this process the PWR, AIR, and WAN LEDs will remain lit while the LAN LED will flash slowly.

The Firmware Restoration utility is an emergency rescue tool to restore a R100 which has failed during a previous firmware upload. A failed firmware upgrade will cause the R100 to enter a failure mode, waiting for the user to use the Firmware Restoration utility to find and upload a new firmware. This is not a firmware upgrade utility and cannot be used on a working R100 Wireless Gateway. Normal firmware upgrades must be done through the web manager.



Using a Hub

If you have problems uploading a firmware while using a network hub, try connecting your computer directly to the LAN port of the R100. Either 10Base-T or 100Base-TX connections will work.

Printer Setup Wizard

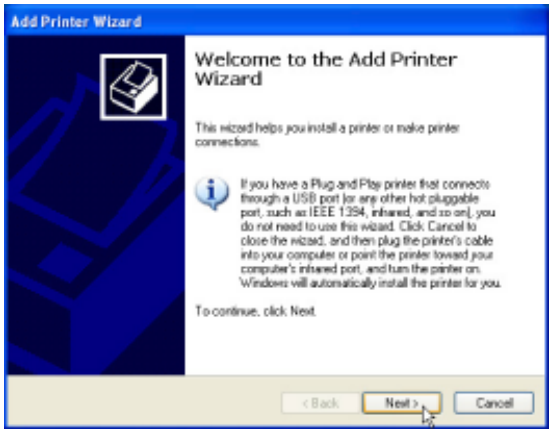
Follow the procedures below to set up your computers to utilise the printer server function of the R100 Wireless Gateway.

Installing the Printer Driver

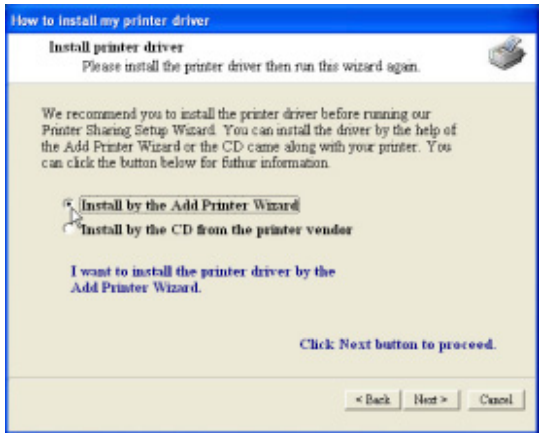
Adding a printer to your computer simplifies the R100 Wireless Gateway Printer Setup Wizard.

You are recommended to install a printer driver through the setup program that comes with your printer (see following Note), and then continue to the “Printer Setup Wizard” in the next section. If you run the “Printer Setup Wizard” without a printer driver installed, you are directed to the “Add Printer Wizard”.

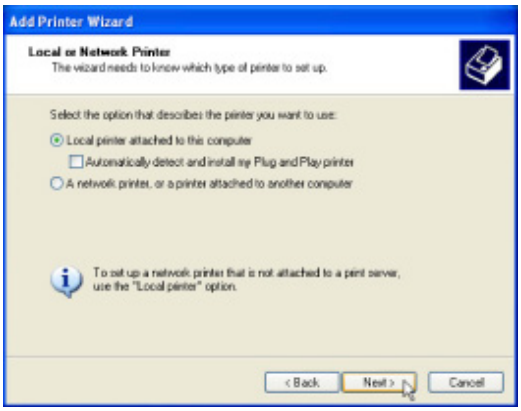
Note: Some printer setup utilities require a printer to be physically connected to your PC during installation. Follow the driver installation instructions to connect your printer to the PC to install the driver and reconnect the R100 after the printer driver has been installed.


Add Printer Wizard
Welcome to the Add Printer Wizard
This wizard helps you install a printer or make printer connections.
To continue, click Next.
< Back
Next >
Cancel

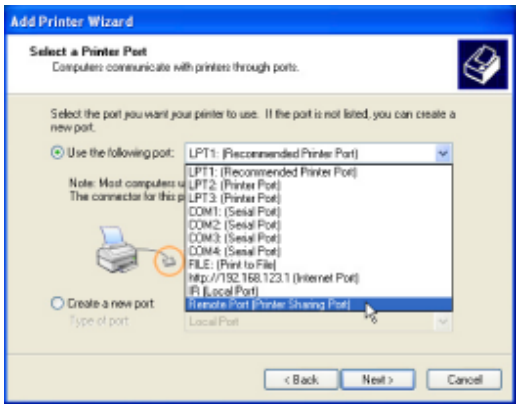
(1) Run the **Add Printer Wizard** from **Start--> Settings-->Printers and Faxes --> Add Printer.**


How to install my printer driver
Install printer driver
Please install the printer driver then run this wizard again.
We recommend you to install the printer driver before running our Printer Sharing Setup Wizard. You can install the driver by the help of the Add Printer Wizard or the CD came along with your printer. You can click the button below for futhur information.
Install by the Add Printer Wizard
Install by the CD from the printer vendor
I want to install the printer driver by the Add Printer Wizard.
Click Next button to proceed.
< Back
Next >
Cancel

(2) Choose **Install by the Add Printer Wizard**.

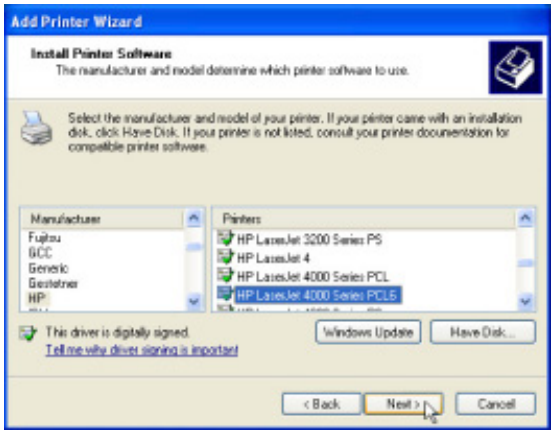

Add Printer Wizard
Local or Network Printer
The wizard needs to know which type of printer to set up.
Select the option that describes the printer you want to use:
Local printer attached to this computer
Automatically detect and install my Plug and Play printer
A network printer, or a printer attached to another computer
To set up a network printer that is not attached to a print server, use the "Local printer" option.
< Back
Next >
Cancel

(3) Choose **Local printer attached to this computer**.

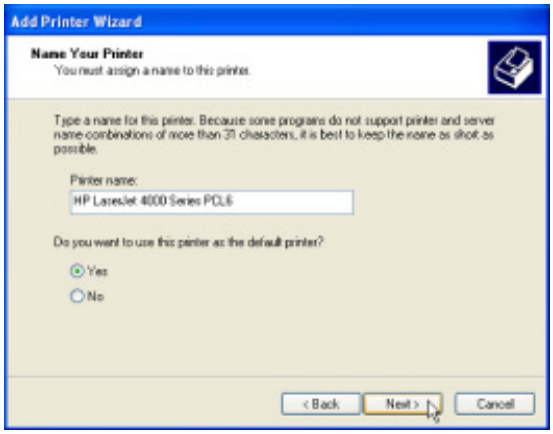

Add Printer Wizard
Select a Printer Port
Computers communicate with printers through ports.
Select the port you want your printer to use. If the port is not listed, you can create a new port.
Use the following port:
LPT1: (Recommended Printer Port)
LPT2: (Printer Port)
LPT3: (Printer Port)
COM1: (Serial Port)
COM2: (Serial Port)
COM3: (Serial Port)
COM4: (Serial Port)
FILE: (Print to File)
IR (Local Port)
Create a new port:
Type of port:
Local Port
< Back
Next >
Cancel

(4) Choose **Remote Port (Printer Sharing Port)**. If this is not available, select LPT1*. You can select a USB port later in the **Printer Setup Wizard** if you are using a USB printer.

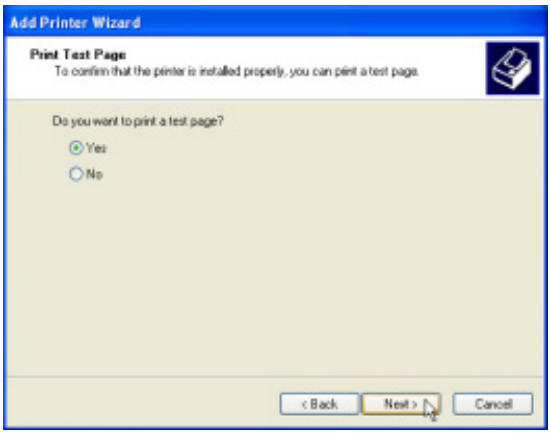
*** the R100 also supports standard based network printing protocol, called LPR, which is also supported by Windows XP, Windows 2000, MAC or Unix based systems. If you are a Windows XP user, please refer to Setup for LPR client under Windows XP for setting up as a LPR client.**


Add Printer Wizard
Install Printer Software
The manufacturer and model determine which printer software to use.
Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for compatible printer software.
Manufacturer
Fujitsu
GCC
Generic
Gestetner
HP
Printers
HP LaserJet 3200 Series PS
HP LaserJet 4
HP LaserJet 4000 Series PCL
HP LaserJet 4000 Series PCL6
This driver is digitally signed.
Tell me why driver signing is important
Windows Update
Have Disk...
< Back
Next >
Cancel

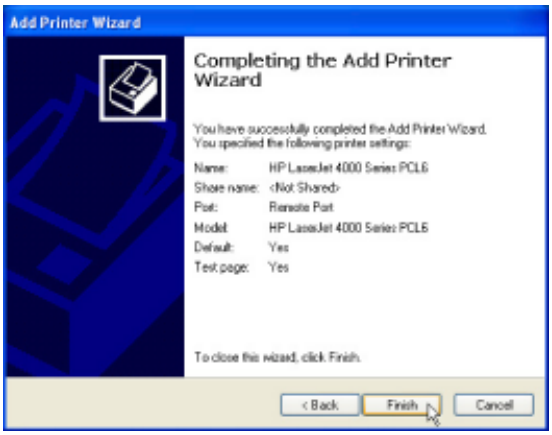
(5) Find your manufacturer and model. Click **Have Disk** if you cannot find your printer in the list and use the driver provided with your printer.


Add Printer Wizard
Name Your Printer
You must assign a name to this printer.
Type a name for this printer. Because some programs do not support printer and server name combinations of more than 31 characters, it is best to keep the name as short as possible.
Printer name:
HP LaserJet 4000 Series PCL6
Do you want to use this printer as the default printer?
Yes
No
< Back
Next >
Cancel

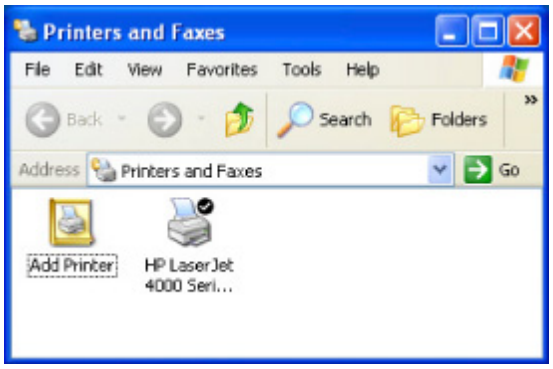
(6) Click **Next** to set this as your default printer.


Add Printer Wizard
Print Test Page
To confirm that the printer is installed properly, you can print a test page.
Do you want to print a test page?
Yes
No
< Back
Next >
Cancel

(7) You can print a test page.

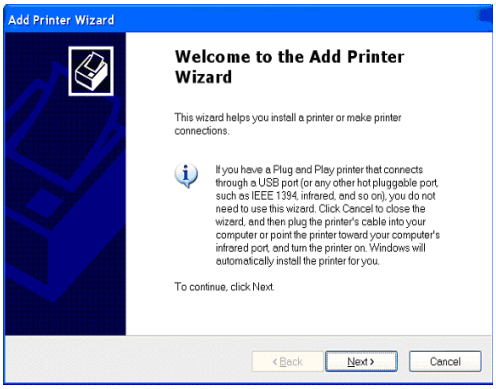


(8) Click **Finish** to close the wizard.

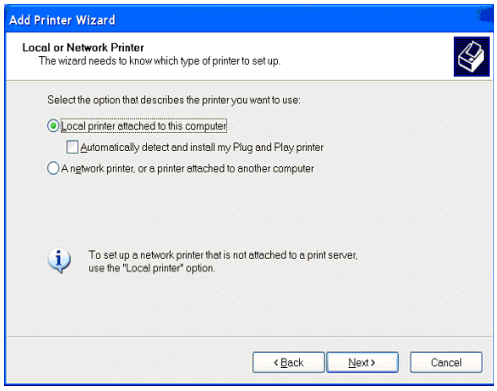


Your printer will show in the **Printers and Faxes** window and the check mark shows that it is set as your default printer.

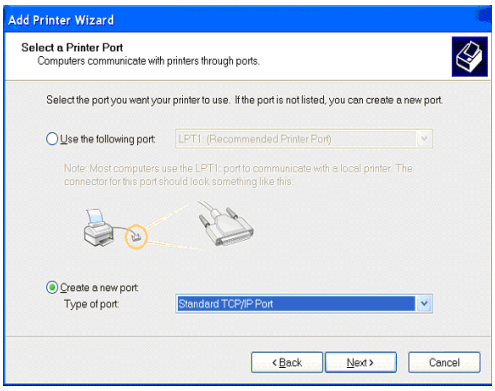
Setup for LPR client under Windows XP


Add Printer Wizard
Welcome to the Add Printer Wizard
This wizard helps you install a printer or make printer connections.
If you have a Plug and Play printer that connects through a USB port (or any other hot pluggable port, such as IEEE 1394, infrared, and so on), you do not need to use this wizard. Click Cancel to close the wizard, and then plug the printer's cable into your computer or point the printer toward your computer's infrared port, and turn the printer on. Windows will automatically install the printer for you.
To continue, click Next.
< Back
Next >
Cancel

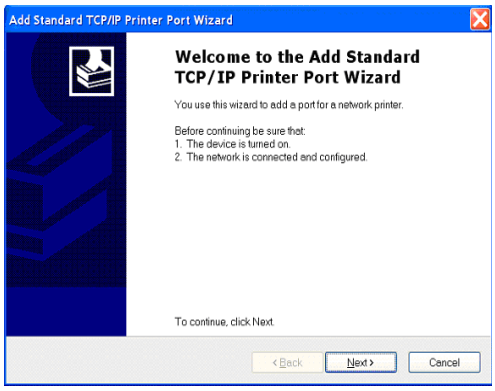
1. Run the **Add Printer Wizard** from **Start -->Printers and Faxes -->Add Printer**.


Add Printer Wizard
Local or Network Printer
The wizard needs to know which type of printer to set up.
Select the option that describes the printer you want to use:
Local printer attached to this computer
Automatically detect and install my Plug and Play printer
A network printer, or a printer attached to another computer
To set up a network printer that is not attached to a print server, use the "Local printer" option.
< Back
Next >
Cancel

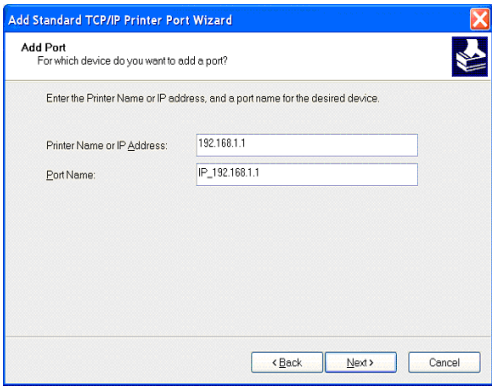
2. Choose **Local printer attached to this computer** then press **Next**.


Add Printer Wizard
Select a Printer Port
Computers communicate with printers through ports.
Select the port you want your printer to use. If the port is not listed, you can create a new port.
Use the following port:
LPT1: (Recommended Printer Port)
Note: Most computers use the LPT1: port to communicate with a local printer. The connector for this port should look something like this:
Create a new port:
Type of port:
Standard TCP/IP Port
< Back
Next >
Cancel

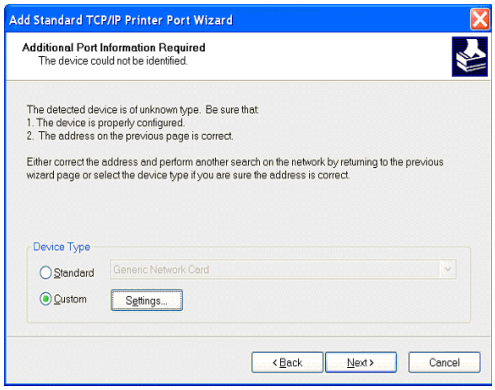
3. Click on **Create a new port** and select **Standard TCP/IP Port** in the pull down menu. Then press **Next**.


Add Standard TCP/IP Printer Port Wizard
Welcome to the Add Standard TCP/IP Printer Port Wizard
You use this wizard to add a port for a network printer.
Before continuing be sure that:
1. The device is turned on.
2. The network is connected and configured.
To continue, click Next.
< Back
Next >
Cancel

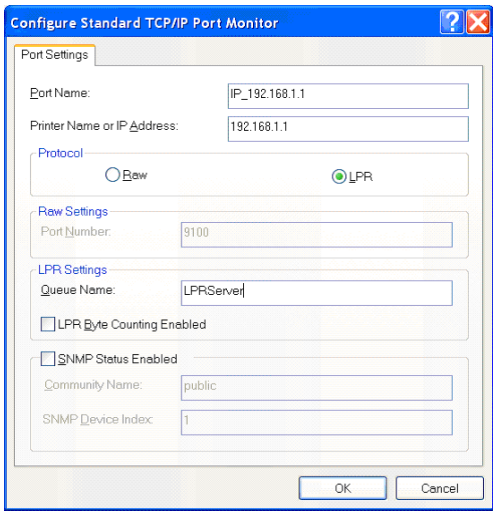
4. Click **Next** on the **Add Standard TCP/IP Printer Port Wizard**.


Add Standard TCP/IP Printer Port Wizard
Add Port
For which device do you want to add a port?
Enter the Printer Name or IP address, and a port name for the desired device.
Printer Name or IP Address:
192.168.1.1
Port Name:
IP_192.168.1.1
< Back
Next >
Cancel

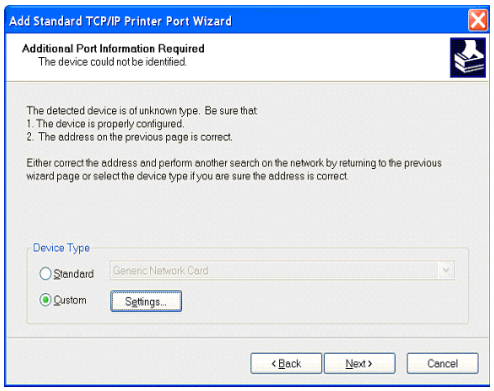
5. Input the IP address of the **R100** in the **Printer Name or IP Address** field and the press **Next**.


Add Standard TCP/IP Printer Port Wizard
Additional Port Information Required
The device could not be identified.
The detected device is of unknown type. Be sure that:
1. The device is properly configured.
2. The address on the previous page is correct.
Either correct the address and perform another search on the network by returning to the previous wizard page or select the device type if you are sure the address is correct.
Device Type
Standard
Generic Network Card
Custom
Settings...
< Back
Next >
Cancel

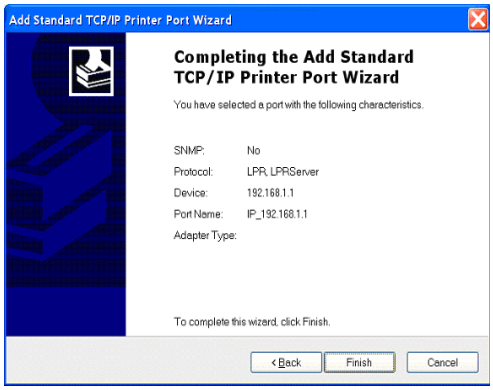
6. Select **Custom** and then click **Settings…**



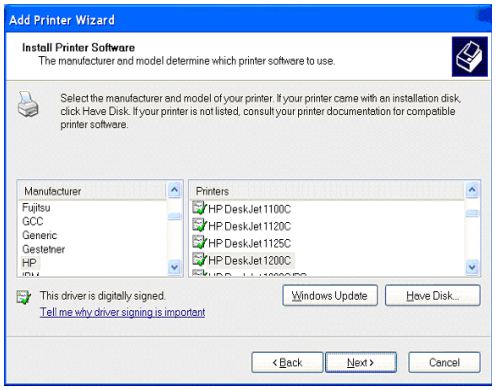
7. Select Protocol **LPR** and type **LPRServer** in **Queue Name field**.


Add Standard TCP/IP Printer Port Wizard
Additional Port Information Required
The device could not be identified.
The detected device is of unknown type. Be sure that:
1. The device is properly configured.
2. The address on the previous page is correct.
Either correct the address and perform another search on the network by returning to the previous wizard page or select the device type if you are sure the address is correct.
Device Type
Standard
Generic Network Card
Custom
Settings...
< Back
Next >
Cancel

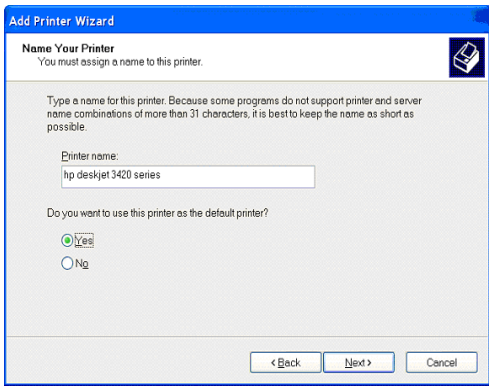
8. After completing the settings, press **Next**.



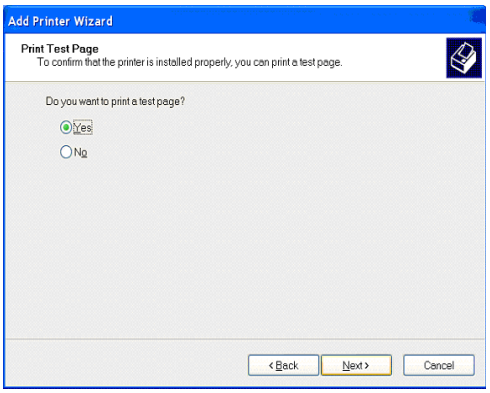
9. Press **Finish** to complete the **Add Standard TCP/IP Printer Port Wizard** and go back to **Add Printer Wizard**.


Add Printer Wizard
Install Printer Software
The manufacturer and model determine which printer software to use.
Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for compatible printer software.
Manufacturer
Fujitsu
GCC
Generic
Gestetner
HP
Printers
HP DeskJet 1100C
HP DeskJet 1120C
HP DeskJet 1125C
HP DeskJet 1200C
This driver is digitally signed.
Tell me why driver signing is important
Windows Update
Have Disk...
< Back
Next >
Cancel

10. Find the manufacturer and model of your printer. Click **Have Disk** if you cannot find it in the list and use the driver provided with your printer.


Add Printer Wizard
Name Your Printer
You must assign a name to this printer.
Type a name for this printer. Because some programs do not support printer and server name combinations of more than 31 characters, it is best to keep the name as short as possible.
Printer name:
hp deskjet 3420 series
Do you want to use this printer as the default printer?
Yes
No
< Back
Next >
Cancel

11. Click **Next** to set this as your default printer.

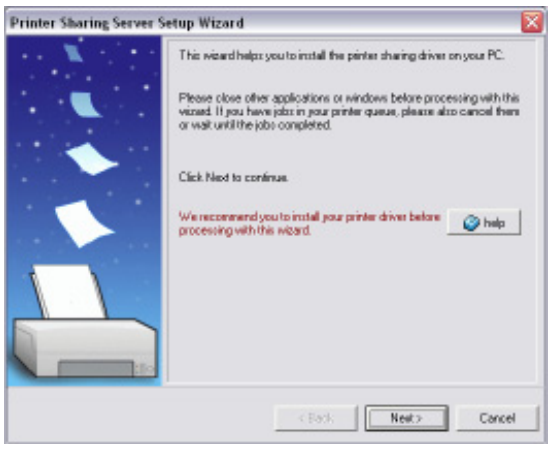

Add Printer Wizard
Print Test Page
To confirm that the printer is installed properly, you can print a test page.
Do you want to print a test page?
Yes
No
< Back
Next >
Cancel

12. Select **Yes** and **Next** to print a test page, otherwise select **No**.

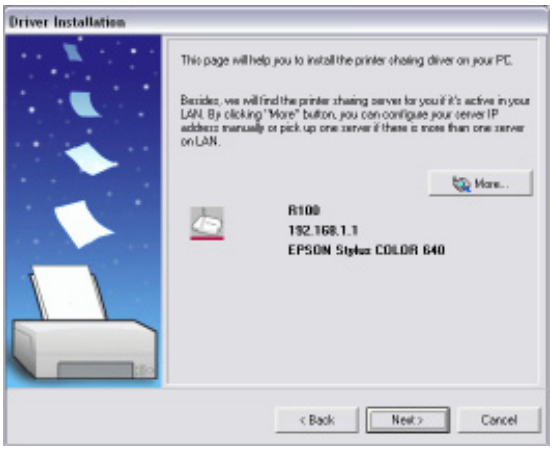
13. When the **Add Printer Wizard** is complete, click **Finish** to close the wizard.

Printer Setup Wizard

Make sure your printer is connected to the Wireless Gateway printer port or USB port and its power is turned on. Launch the **Printer Setup Wizard** through **Start-->Program-->R100 Wireless Gateway**. The wizard will explore all available R100 Wireless Gateways and model information of the printers attached to them in your local network.


Printer Sharing Server Setup Wizard
This wizard helps you to install the printer sharing driver on your PC.
Please close other applications or windows before processing with this wizard. If you have jobs in your printer queue, please also cancel them or wait until the jobs completed.
Click Next to continue.
We recommend you to install your printer driver before processing with this wizard.
help
< Back
Next >
Cancel

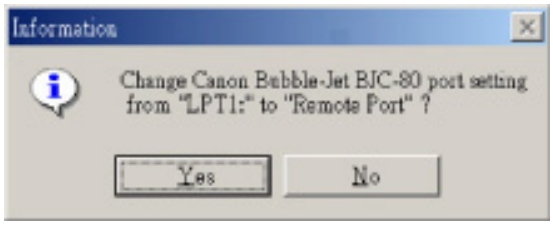
(1) Having a printer installed on the printer port (LPT1) or a USB port makes the setup process easier (refer to the following page).


Driver Installation
This page will help you to install the printer sharing driver on your PC.
Besides, we will find the printer sharing server for you if it's active in your LAN. By clicking "More" button, you can configure your server IP address manually or pick up one server if there is more than one server on LAN.
More...
R100
192.168.1.1
EPSON Stylus COLOR 640
< Back
Next >
Cancel

(2) If the printer is found, the name of the printer will be shown on this screen.

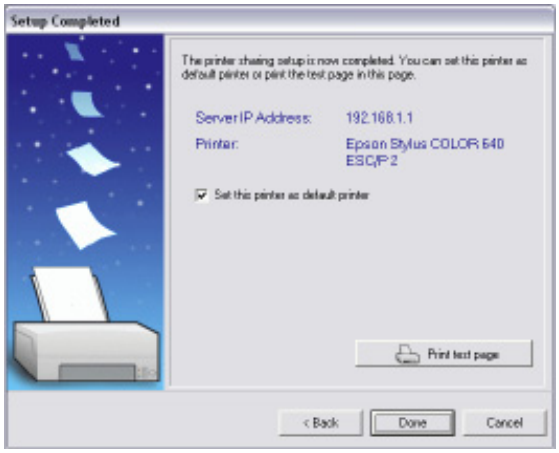
Note: If there is an error communicating with the printer, you will get this message. Make sure that the printer is ON, ready, and connected. Click **Back** and **Next**.

If you can see this meesage , this means no Server found during this search. Please click "More" to search again after checking all the settings.



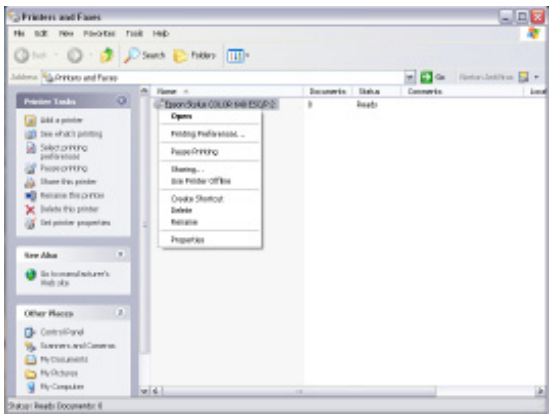
(3) This setup wizard will change your default printer to use Standard TCP/IP port which is serviced by the R100 Wireless Gateway.

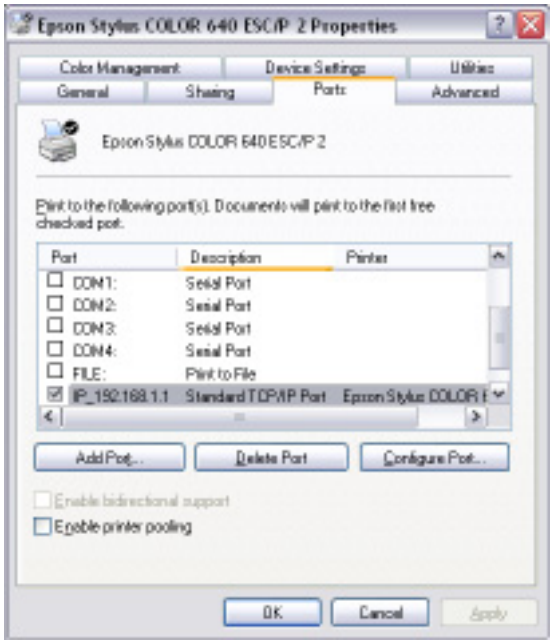
Note: For Windows XP or Windows 2000, this setup wizard will guide you to select or add a **Standard TCP/IP port**. Refer to **Setup for LPR client under Windows XP** for details. For Windows 98 or Windows ME, this setup wizard will change your default printer to use **Remote Port** which is serviced by the R100 Wireless Gateway.


Setup Completed
The printer sharing setup is now completed. You can set this printer as default printer or print the test page in this page.
Server IP Address: 192.168.1.1
Printer: Epson Stylus COLOR 640 ESC/P 2
Set this printer as default printer
Print test page
< Back
Done
Cancel

(4) Click **Done** when setup is complete.

Verifying Your Printer





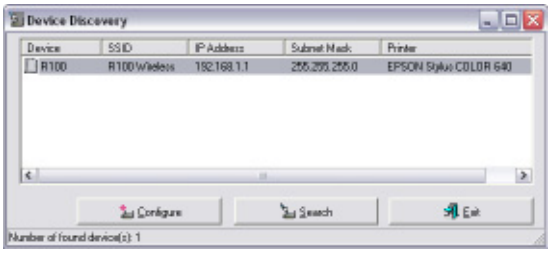
After setting up the printer, a printer icon will appear in Windows' **Printers and Faxes**. Right click the printer icon and choose **Properties** to configure the printer.

If your printer was previously set up, the R100 Wireless setup wizard changes the printing port from the computer's local LPT1 (parallel) port or USB port to **Standard TCP/IP port***. If necessary, you can change this back at anytime or use Windows **Add Printer** to setup another printer.

Note: If you use Windows 98 or ME which do not support **Standard TCP/IP port,** you need to use **Remote Port** which is supported by the R100.

Verifying Your Printer (Cont')

Note: If you use LPR client in Windows XP or Windows 2000, Standard TCP/IP port will be used. Please refer to Setup for LPR client under Windows XP in details.



When properly setup, the R100 Wireless Gateway will show the printer name in the **Device Discovery** utility and show **On-Line** under the **Printer Server** on the **Status** page of the web manager.

4. Wireless Performance

This section provides the user with ideas for how to improve the performance of a R100 Wireless Gateway.

Site Topography

For optimal performance, position wireless mobile clients and the R100 Wireless Gateways away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators, and other industrial equipment. Signal loss can occur when metal, concrete, walls or floors block transmission. Situate the R100s in open areas or add additional R100 gateways as needed to improve coverage.

Microwave ovens operate in the same frequency band as the R100. Therefore, if you use a microwave within range of the gateway you may notice network performance degradation. However, both your microwave and the R100 Wireless Gateway will continue to function.

Site Surveys

A site survey (utility provided with the WLAN PC card and CF card) analyses the installation environment and provides users with recommendations for equipment and its placement. The optimum placement differs for each model.

Range

Every environment is unique with different obstacles, barriers, materials, etc. and, therefore, it is difficult to determine the exact range that will be achieved without testing. However, some guidelines have been developed to estimate the range that users will see when the product is installed in their facility, but there are no hard and fast specifications.

Radio signals may reflect off some obstacles or be absorbed by others depending on their construction. For example, with two 802.11b radios, you may achieve up to 1000 feet in open space outdoors where two devices have a line of sight, meaning they see each other with no obstacles. However, the same two units may only achieve up to 300 feet of range when used indoors.

The IEEE 802.11b specification supports four data rates: 11 Mbps, 5.5 Mbps, 2 Mbps, and 1 Mbps. Operation at 1 Mbps provides greater range than operation at 11 Mbps. The R100 Wireless Gateway will automatically adjust the data rate to maintain a usable radio connection.

Therefore, a client that is close to the gateway may operate at 11 Mbps while a client that is on the fringe of coverage may operate at 1 Mbps. As mentioned earlier, you can configure the data rates that the R100 Wireless Gateway will use. Note that if you limit the range of data rates available to the gateway, you may reduce the effective wireless range of the Diamond Digital Wireless products.

Troubleshooting

The R100 Wireless Gateway is designed to be very easy to install and operate. However, if you experience difficulties, use the information in this chapter to help diagnose and solve problems. If you cannot resolve a problem, contact Technical Support, as listed at the back of this manual.

Common Problems and Solutions

Problem

Gateway does not power up:

Solution

- Check for a faulty power supply by measuring the output voltage of the adaptor with an electrical test meter.
- Check failed AC supply (power outlet)

Problem

Cannot communicate with the Wireless Gateway through a wired network connection.

Solution

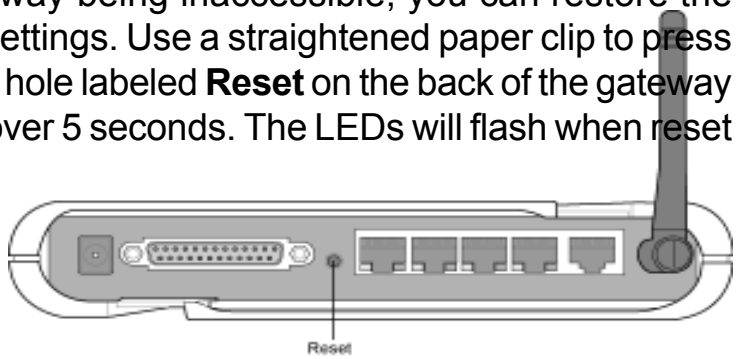
- Verify network configuration by ensuring that there are no duplicate IP addresses. Power down the device in question and ping the assigned IP address of the device. Ensure no other device responds to that address.
- Check that the cables used have proper pin outs and connectors or use another network cable.

Problem

The R100 Wireless Gateway Web Manager still cannot find or connect to the gateway after verifying the IP address and network cable, changes cannot be made, or password is lost.

Solution

In the case of the gateway being inaccessible, you can restore the R100's factory default settings. Use a straightened paper clip to press the button located in the hole labeled **Reset** on the back of the gateway and keep it depressed over 5 seconds. The LEDs will flash when reset is successful.



Reset to Defaults

The following are factory default values. These values will be present when you first receive your R100 Wireless Gateway, if you push the reset button on the back of the gateway for over 5 seconds, or if you click the **Restore** button on the **Factory Default** page under **Advanced Setup**.

Name	Default Value
User Name	admin
Password	admin
Enable DHCP	Yes
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
DNS Server 1	192.168.1.1
DNS Server 2	(blank)
SSID	default
Domain Name	(blank)

Problem

My 802.11b PC Card will not associate with the R100 Wireless Gateway.

Solution

Follow these steps:

1. Try to bring the devices closer together; the PC Card may be out of range of the R100.
2. Confirm that the R100 and PC Card have the same SSID.
3. Confirm that the R100 and PC Card have the same Encryption settings, if enabled.
4. Confirm that the R100's Air and Link LEDs are solid green.
5. Confirm that the authorization table includes or excludes the MAC address of the WLAN PC card if **Wireless Access Control** is enabled.

Problem

The throughput seems slow.

Solution

To achieve maximum throughput, verify that your antennas are well-placed, not behind metal, and do not have too many obstacles between them. If you move the client closer to the R100 and throughput increases, you may want to consider adding a second R100 Gateway and implementing roaming.

- Check antenna, connectors and cabling.
- Verify network traffic does not exceed 37% of bandwidth.
- Check to see that the wired network does not exceed 10 broadcast messages per second.
- Verify wired network topology and configuration.

Problem

I cannot find the R100 Wireless Gateway using the R100 Wireless Gateway Discovery utility.

Solution

To configure the R100 through a wireless LAN card, your computer must be in the same subnet of the R100. You cannot find the R100 Wireless Gateway with a subnet different from your computer within the same gateway. You must change your computer to the same subnet as the R100s. The factory default subnet of the R100 Wireless Gateway is **192.168.1.1**.

In Windows NT/2000/XP, you must log in with Administrator privileges so that all functions of the R100 Wireless Gateway Manager can function correctly. If you do not log in as a member of the Administrator group, you cannot change IP settings but can still run the Discovery utility if the original IP setting is correct.

Problem

How do I upgrade the firmware on the R100 Wireless Gateway?

Solution

Periodically, a new Flash Code is available for R100 Wireless Gateways on the Web site at:

http://www.MitsubishiElectric.com.au

Update the R100's Flash Code using the **Firmware Upgrade** option on the **System Setup** menu of the Web manager.

Glossary

Access Point - An access point is a device that allows wireless clients to connect to other wireless clients and it acts as a bridge between wireless clients and a wired Ethernet network.

Broadband - A type of data transmission in which a single medium (such as cable) carries several channels of data at once.

Channel - Wireless access points allow you to choose different radio channels in the wireless spectrum. A wireless LAN device operates within the 2.4 GHz spectrum and a channel is within a FCC specified range, similar to any radio channel.

Client - A client is the desktop or mobile PC that is connected to your network.

Device name - Also known as DHCP client ID or network name. Sometimes provided by an ISP when using DHCP to assign addresses.

DHCP (Dynamic Host Configuration Protocol) - This protocol allows a computer (or many computers on your network) to be automatically assigned a single IP address from a DHCP server.

DNS Server Address (Domain Name System) - DNS allows Internet host computers to have a domain name and one or more IP addresses. A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a user enters a domain name into the Internet browser, the user is sent to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS server your ISP has assigned.

DSL Modem (Digital Subscriber Line) - A DSL modem uses your existing phone lines to transmit data at high speeds.

Encryption - This provides wireless data transmissions with a level of security.

ESSID (Extended Service Set Identifier) - You must have the same ESSID entered into the gateway and each of its wireless clients. The ESSID is a unique identifier for your wireless network.

Ethernet - Ethernet networks are connected by cables and hubs, and move data around. This is a standard for computer networks.

Frame-bursting - Refers to burst mode. *Burst mode* optionally allows a station to transmit a series of frames without relinquishing control of the transmission medium.

Firewall - A firewall determines which information passes in and out of a network. NAT can create a natural firewall by hiding a local network's IP addresses from the Internet. A Firewall prevents anyone outside of your network from accessing your computer and possibly damaging or viewing your files.

Gateway - A network point that manages all the data traffic of your network, as well as to the Internet and connects one network to another.

Handshaking - handshaking refers to the signals that are transmitted between communications networks that establish a valid connection between two stations.

IEEE - The Institute of Electrical and Electronics Engineers. The IEEE sets standards for networking, including Ethernet LANs. IEEE standards ensure interoperability between systems of the same type.

IP Address (Internet Protocol) - An IP address consists of a series of four numbers separated by periods, that identifies a unique Internet computer host, allowing messages intended for that computer to be delivered to the correct destination.

ISP (Internet Service Provider) - An ISP is a business that allows individuals or businesses to connect to the Internet. Users log on to the Internet using an account with an ISP or Internet Service Provider. ISPs can serve IP addresses dynamically, or assign static (fixed) IP addresses to individual computers.

ISP Gateway Address - The ISP Gateway Address is an IP address for the Internet router. This address is only required when using a cable or DSL modem.

LAN (Local Area Network) - A LAN is a group of computers and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC Address (Media Access Control) - A MAC address is the hardware address of a network device.

NAT (Network Address Translation) - NAT masks a local network's group of IP addresses from the external network, allowing a local network of computers to share a single ISP account. This process allows all of the computers on your home network to use one IP address. This will enable access to the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

PC Card - This is an Ethernet card that connects to the PCMCIA slot on your Notebook PC. This enables the computer to communicate with wireless access points.

PPP (Point-to-Point Protocol) - PPP is a protocol for communication between computers using a serial interface, typically a personal computer connected by phone line to a server.

PPPoE (Point-to-Point Protocol over Ethernet) - Point-to-Point Protocol is a method of secure data transmission. PPP using Ethernet to connect to an ISP.

Subnet Mask - A subnet mask is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network.

TCP/IP (Transmission Control Protocol/Internet Protocol) - This is the standard protocol for data transmission over the Internet. Protocols used to connect hosts on the Internet.

WAN (Wide Area Network) - A system of LANs, connected together. A network that connects computers located in separate areas, (i.e., different buildings, cities, countries). The Internet is a wide area network.

WECA (Wireless Ethernet Compatibility Alliance) - An industry group that certifies cross-vender interoperability and compatibility of IEEE 802.11b wireless networking products and to promote that standard for enterprise, small business, and home environments.

WLAN (Wireless Local Area Network) - This is a group of computers and other devices connected wirelessly in a small area. A wireless network is referred to as LAN or WLAN.

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- The busybox swiss army knife of embedded linux
- The zebra routing daemon implementation
- The udhcpd DHCP client/server implementation
- The pptp-linux PPTP client implementation
- The rp-pppoe PPPoE client implementation
- The pppd PPP daemon implementtion
- The dproxy DNS proxy implementation
- The bridge-utils package

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